NOTE

This Microfiche meets the quality requirements of the American National Standard for Microfiche of Documents (ANSI PH5.9-1975). However, because of imperfections in the document from which it was made, it contains images that are illegible or difficult to read. The source document for this microfiche is the best copy that could be obtained prior to filming.

Congressional Information Service, Inc.
Washington, D.C.

CIS

Office of Technology Assessment

Congressional Board of the 98th Congress

MORRIS K. UDALL, *Arizona, Chairman*

TED STEVENS, *Alaska, Vice Chairman*

Senate	House
ORRIN G. HATCH *Utah*	GEORGE E. BROWN, JR. *California*
CHARLES McC. MATHIAS, JR. *Maryland*	JOHN D. DINGELL *Michigan*
EDWARD M. KENNEDY *Massachusetts*	LARRY WINN, JR. *Kansas*
ERNEST F. HOLLINGS *South Carolina*	CLARENCE E. MILLER *Ohio*
CLAIBORNE PELL *Rhode Island*	COOPER EVANS *Iowa*

JOHN H. GIBBONS
(Nonvoting)

Advisory Council

CHARLES N. KIMBALL, *Chairman*
Midwest Research Institute

EARL BEISTLINE
University of Alaska

CHARLES A. BOWSHER
General Accounting Office

CLAIRE T. DEDRICK
California Land Commission

JAMES C. FLETCHER
University of Pittsburgh

S. DAVID FREEMAN
Tennessee Valley Authority

GILBERT GUDE
Congressional Research Service

CARL N. HODGES
University of Arizona

RACHEL McCULLOCH
University of Wisconsin

WILLIAM J. PERRY
Hambrecht & Quist

DAVID S. POTTER
General Motors Corp.

LEWIS THOMAS
Memorial Sloan-Kettering Cancer Center

Director

JOHN H. GIBBONS

This is an OTA Working Paper that has neither been reviewed nor approved by the Technology Assessment Board

J952-69

DIAGNOSIS RELATED GROUPS (DRGs) AND THE MEDICARE PROGRAM

Working Paper

Using Diagnosis Related Groups (DRGs) in Hospital Payment:
The New Jersey Experience

December 1983

CONGRESS OF THE UNITED STATES
Office of Technology Assessment
Washington, D. C. 20510

Preface

This volume contains papers written for OTA to assist in preparation of the technical memorandum, *Diagnosis Related Groups (DRGs) and the Medicare Program: Implications for Medical Technology*. OTA does not endorse these papers. In several instances, the OTA report reaches somewhat different conclusions because of additional information which was obtained later. These papers, however, may prove valuable for readers needing more detailed or specific information than could be accommodated in the final assessment report, and are being made available for such purposes.

USING DIAGNOSIS RELATED GROUPS (DRGs)
IN HOSPITAL PAYMENT:

The New Jersey Experience

A Working Paper

Prepared for OTA

by

Joanne E. Finley, MD, MPH
Princeton, New Jersey

Part of the OTA assessment entitled "Medical Technology and Costs of the Medicare Program"

OTA Staff for Working Paper

Anne Kesselman Burns, Project Director
Medical Technology and Costs of the Medicare Program

Pamela Simerly, Research Assistant

Clyde J. Behney
Health Program Manager

Jennifer Nelson, Secretary

Ann Covalt,* Editor

---

*Contractor

Section 222

Public Law 92-603/(a)(1) directs the Secretary of the Department of Health and Human Services to " . . . develop and carry out experiment and demonstration projects designed to determine the relative advantages and disadvantages of various alternative methods of making payment on a prospective basis to hospitals, skilled nursing facilities, and other providers of services for care and services provided by them under Title XVIII of the Social Security Act and under State plans approved under Titles XIX and V of such Act, including alternative methods for classifying providers, for establishing prospective rates of payment, and for implementing in a gradual, selective, or other basis the establishment of a prospective payment system, in order to stimulate such providers through positive (or negative) financial incentives to use their facilities and personnel more efficiently and thereby to reduce the total costs of the health programs involved without adversely affecting the quality of services by containing or lowering the rate of increase in provider costs that has been and is being experienced under the existing system of retrospective cost reimbursement."

Section 1526

Public Law 93-641 authorizes the Secretary to make grants "... for the purpose of demonstrating the effectiveness of State Agencies regulating rates for the provision of health care ...."

TABLE OF CONTENTS

Page
List of Figures.......... vi
List of Tables.......... vi
Glossary of Acronyms.......... vii
Acknowledgments.......... viii

CHAPTER 1: INTRODUCTION.......... 1

Definitions.......... 1
The Original Development of DRGs.......... 1

CHAPTER 2: THE CLIMATE: THE HEALTH CARE ISSUES IN NEW JERSEY THAT LED TO PROSPECTIVE REIMBURSEMENT BY DRGS.......... 4

The Climate's Evolution.......... 4
The SHARE System.......... 6

CHAPTER 3: THE NEW JERSEY EXPERIMENT: USING DRGS TO PRICE HOSPITAL CARE AND TO SET REIMBURSEMENT RATES.......... 10

The New Common Denominator: DRGs.......... 11
Overview of Cost Finding.......... 13
    General Data Requirements.......... 13
Technical Problems in Cost Finding.......... 18
    Patient Abstracts.......... 18
    Hospital Financial Data.......... 18
    Billing Data.......... 19
Policy Issues.......... 20
    Cost Finding for Physician Services.......... 20
    Cost Finding for Nursing Care.......... 21
    Developing an Economic Factor.......... 22
Financial Elements.......... 26
Applying the Case-Mix Model.......... 27
The Experiment Concluded.......... 29

CHAPTER 4: IMPLEMENTING THE SYSTEM: COVERING ALL PAYORS AND ALL HOSPITALS STATEWIDE.......... 33

The Political Climate.......... 33
The Federal Contract for Implementation.......... 35
    The Federal Waiver of Medicare Principles of Reimbursement and the "Cap".......... 37
Getting Ready: Refinements.......... 39
    Rate Design and Incentives.......... 39
    New Financial Elements.......... 43
    Costs of Medical Education.......... 44
    Calculations of Return on Investment--For-Profit Hospitals.......... 45
    Capital Facilities.......... 45
    Appeals.......... 49

Getting From Here to There: Constructing the Preliminary Cost Base and the Schedule of Rates 51

CHAPTER 5: PROBLEMS ANTICIPATED: THE NEED FOR CONTINUING RESEARCH AND DEVELOPMENT AND NEW POLICIES 54

The New Diagnosis-Related Groups (DRGs) 54
Relative Intensity Measures (RIMs) for Pricing Nursing Care 60
Measuring the Quality of Care in a DRG System: The Relationships to Reimbursement 61
    Results of the Pilot Study 65
    Quality and Policy 66
The Role of Peer Review 67

CHAPTER 6: PROBLEMS NOT ANTICIPATED 71

The Problem of Assigning Patients to DRGs That Have Higher Payment Rates -- "DRG Creep" Payment 71
    The New DRGs 71
    The Uniform Bill-Patient Summary 72
    The Role of Peer Review 72
    Reconciliation 72
"Bad Bills" and Other Payer Problems 72
Controlling Capital Expenditures 76
Public Hospitals 79

CHAPTER 7: INTERIM RESULTS 83

Savings 84
Costs of Developing and Implementing the DRG System 87
The System's Influence on Hospitals with Deficits 90
The Role of the Hospital Rate-Setting Commission 92
    Health Policy Decisions 92
    Awarding Payer Differentials 94
    Social Policy: Dealing with Providers' Losses of Federal Funds 97
    DRG Appeals: Technology Assessment 99
Changing Organizational Behavior: The Management Reports 102

CHAPTER 8: FINAL COMMENTS ON REPLICABILITY 105

DRGs as a System to Classify Patients 105
Cost Finding Using DRG Data 105
Billing Data for Pricing and Paying by DRGs 106
Decisions About Financial Elements 106
Decisions About Setting Rates 106
Covering All Payers 106
Controls of Capital Expenditures 107
Appeals 107
Management Reports 107
Quality Assessment 108

ATTACHMENTS.. 109

Attachment A: Original Regulation.............................. 109
Attachment B: Minimum Data Originally Required in Hospital Reporting and How Such Data Were Used....................... 111
Attachment C: Proposed Rules for 1979 Hospital Reporting Of Patient Case Mix.. 113
Attachment D: Approved Regulation by HCAB........................ 115
Attachment E: Uniform Bill-Patient Summary....................... 117
Attachment F: Table VA, Direct Patient Care by DRG by Cost Center Class Ranked by Total Volume, 1979 DRG Costs Compared To Standards at Hospital Base Year Volume.................... 118
Attachment G: Table VB, Direct Patient Care by DRG Ranked by Total Volume, 1979 DRG Costs Compared to Standards at Hospital Base Year Volume.. 119
Attachment H: Preliminary Cost Base Report....................... 120
Attachment I: Computation of Reasonable Direct Patient Care Costs.. 121
Attachment J: Preliminary Cost Base: Reconciliation to Net Revenue Related to Patient Care.............................. 122
Attachment K: Schedule of Rates as Adjusted for Compliance...... 123
Attachment L: 1982 Schedule of Rates............................ 124
Attachment M: Management Report Descriptions..................... 126

REFERENCES 128

LIST OF FIGURES

Figure		Page
3-1	DRG Logo	16
3-2	Rate Setting in New Jersey: Patient Cost-Finding	17
4-1	Cost per Case Standard Calculation Summary	42
4-2	Stages of the Rate Setting Methodology	53
5-1	Major Diagnostic Category 06: Diseases & Disorders Of the Digestive System	56
	Major Diagnostic Category 22: Burns	58
7-1	DRG Program Costs	89
7-2	New Jersey Department of Health, DRG Appeals Process	100

LIST OF TABLES

Table		Page
3-1	Cost Centers and Measures of Resource Use (MRUs) in the Case-Mix Accounting Model	15
3-2	Cost per Case and per Diem by Hospital: DRG 124 Ischemic Heart Disease Except Acute Myocardial Infarction Without Operation with Major Secondary Diagnosis	30
4-1	New Jersey Principles of Reimbursement Compared to Those of Medicare, 1976-1982	50
7-1	Comparison of New Jersey Hospital Operating Expenses to National Averages (Percentage Change 1979-1981)	86
7-2	Cost Comparison for Case-Mix Reimbursement System HCFA Contract No. 600-77-0022	88
7-3	DRG Program Costs and Hospital Implementation Costs	91
7-4	The Influence of The DRG System on Hospitals with Deficits	93
7-5	Payer Differentials in Effect: 1981	96

Glossary of Acronyms

APG	Ambulatory Patient Group
CFFA	Capital Facilities Formula Allowance
CPHA	Commission on Professional and Hospital Activities
CPI	consumer price index
CUPIS	Connecticut Utilization Patient Information System
DHHS	Department of Health and Human Services
DRG	Diagnosis Related Group
ECI	employment cost index
ESRD	end-stage renal disease
FAR	final administrative rate
HCFA	Health Care Financing Administration
HMO	Health Maintenance Organization
HRET	Hospital Research and Educational Trust
HSA	Health System Agency
ICD-9-CM	International Classification of Diseases-9-Clinical Modifications
LOS	length of stay
MDC	Major Diagnosis Category
MRU	measure of resource use
NJDOH	New Jersey Department of Health
NJHA	New Jersey Hospital Association
NJUP	New Jersey Utilization Program
PAR	proposed administrative rate
PAS	professional activity study
PCB	preliminary cost base
PGY	physician postgraduate year
PRO	Peer Review Organization
PSRO	professional standards review organization
RIM	relative intensity measure
SHARE	Standard Hospital Accounting and Rate Evaluation
SHPDA	State Health Plan and Development Agency
SSA	Social Security Administration
TEFRA	Tax Equity and Fiscal Responsibility Act
TPN	total parenteral nutrition
UB-PS	uniform bill-patient summary
UHDDS	uniform hospital discharge data set
URO	Utilization Review Organization

ACKNOWLEDGMENTS

It is fortunate for our country that trailblazing attracts the brightest minds. Many outstanding people came, contributed, and went from the New Jersey DRG Project. Each deserves recognition as do the many from New Jersey's hospitals and healing professions, and other leading citizens who served so usefully in advisory capacities, and on Boards and Commissions. Key legislators and Governor Brendan T. Byrne supported us and kept us balanced and considerate of the interests of all. It would be impossible to list everyone who contributed. Therefore, specific mention is made of those who had an active hand in helping prepare this timely report.

Overall advice and answers to many questions came from Bruce Vladeck, PhD, former Assistant Commissioner for Health Planning and Resources Development; Joseph Morris, MBA, now Acting Assistant Commissioner; Michael Kalison, JD, who was Associate Project Manager in the exciting days of the experimental phase; Jo A. Surpin, MBA, and Leo Lichtig, PhD, who had been Assistant Project Manager. Without David Talbot, MIM, the Project's Contracts Manager who cheerfully gathered together documents and culled statistics to make current tables and charts, with the able assistance of Vincent Martucci, ME, Executive Assistant, Division of Health Planning and Resources Development, the story would still be emerging from mountains of materials and might be untold.

Major contributions to specific sections and chapters were made by Jo A. Surpin and Natalie Pope (Cost-Finding and Rate-Setting); Leo Lichtig (Technical Data Problems and UB-PS); Michael Kalison (Rate-Setting, and Appeals); and Gar Reed (Capital Expenditures Controls). Jeffrey Warren, MPA, Executive Director of the Hospital Rate-Setting Commission, and Analyst Pamela Dickson made many contributions and prepared the analysis of savings. Larry Eitel, Health Economics Research Specialist, and Warren Nestler, MD, of Overlook Hospital (Quality); Grace Smith, RN MBA, (RIMS-Nursing); Bernice Ferguson, RN, MPH (Peer Review); Faith Goldschmidt, MA, MPH (the new DRG list and DRG "creep"); and, James Hull, MBA, Vice President, Network, Inc. (Public Hospitals), all were invaluable in their help.

Kermit Tessein and his cooperative, overworked Graphic Arts and Print Shop staffs in the New Jersey Department of Health, created and reproduced many of the charts and graphs.

The phenomenal team at Morristown Memorial Hospital: Donald Bradley, President; Joseph Clancy, Assistant Vice President Management Systems; Robert Ambrose, MD, Medical Staff Director; and James Carroll, Vice President for Finance, also gave wholly of their time to discuss technology assessment, and the use of the management reports.

Finally, mention must be made of the constant support and encouragement of my colleagues at Yale, past and present. DRGs for New Jersey began in 1974 over lunch at Mory's with John D. Thompson. The manuscript received the scrutiny of present colleagues in Yale's Department of Epidemiology and Public Health, especially A. Kay Keiser, PhD.

Joanne E. Finley, MD, MPH
Princeton, New Jersey

1.

Introduction

CHAPTER 1
INTRODUCTION

Definitions

Diagnosis Related Group (DRG): A class of patients defined by medical characteristics, such as primary diagnosis, secondary diagnosis, age, and surgical procedure; representing a consistent amount of resource consumption as measured by some unit (patient days, dollars, etc.) (22).

Prospective reimbursement system: A method to construct a budget for the coming year, using definitions of revenues reasonably needed to operate, and to fix payment rates based on this projection. In reimbursing hospitals prospectively, the sum of revenues is paid to the hospital by some agreed-upon method that should be timely, and by each payer according to its legitimate share of patient costs. Such revenues become the fixed amount the hospital receives from payers to operate during a budget year, except for any additional amounts required to account for inflation or appealable items.

Case mix: The types of patients treated in a given hospital or group of hospitals as defined by the patients' clinical attributes (i.e., diagnoses, procedures, age, sex, etc.).

The Original Development of DRGs

Scholars of organizational behavior spent much effort in the 1970's attempting to define a hospital's product. Like those who studied other ailing industries, they wanted to define the output (product) to understand and justify the use and costs of the resources essential to produce it. Without a satisfactory definition of "units of output upon which selected aspects of hospital performance and costs could be analyzed and monitored" (67) the reason for threatened hospital bankruptcies in the face of growing payments from multiple sources remained a mystery. After the 1965 enactment of Title XVIII (Medicare) and Title XIX (Medicaid) of the Social Security Act, governments also became increasingly responsible for hospital revenues. Thus, as as costs escalated, legislators and public officials also became concerned.

A group of researchers associated with the Yale University School of Medicine (Department of Epidemiology and Public Health), the Yale School of Organization and Management, and the Yale Institution for Social and Policy Studies agreed with Lave and Lave's observation that a hospital is a "multiple product firm as reflected by its case mix" (27). With a portion of a U.S. Public Health Service Health Research Grant that supported the Health Services Research Program of the Institution for Social and Policy Studies (HS 00090-05), this group developed a computer software program (AUTOGRP) (29) to assign the "customers" of a hospital to diagnostic "product groups." The goal was to classify hospital patients by characteristics their doctors considered medically meaningful and that clustered significantly within some measure of resource consumption. These researchers thought that if a classification system could be found that made sense to clinicians and accountants alike, it might be possible to intelligently assess quality of care, necessity of procedures and resource use, and reasonableness of patient costs. This patient classification system later became known as the DRG system.

> The fundamental purpose of the DRG approach is to identify in the hospital, acute-care case types, each representing a class of patients with similar processes of care and a predictable package of services [or product].... Using this approach the entire range of [existing] diagnostic codes was initially divided into broad disease areas, such as Diseases of the Eye.... Each of these categories was further subdivided into groups based on values for those variables that demonstrate an effect in predicting output as measured by length of stay" (13).

With diagnosis as the independent variable, the dependent variable chosen at that time for the development of DRGs was hospital length of stay (LOS). Another approach considered, but not used, was relating costs of care (another measure of resource consumption) to case definition and case mix (65, 69). The intended user of the Yale system was the Connecticut Utilization Patient Information System (CUPIS). This central data system was used by the Professional Standards Review Organizations (PSROs) of that State, which had been mandated to screen patients supported by Federal programs to ensure appropriate hospital utilization. Thus, it was to better fulfill the PSROs' mandate that the LOS measure and the computer system for assigning patients to diagnostic categories were advanced.

The Bureau of Quality Assurance of the U.S. Department of Health, Education, and Welfare also awarded a contract to the Yale group "... to demonstrate the effectiveness of...AUTOGRP...in helping PSROs discharge their responsibilities" (12). Yale reports from this period also allude to the Social Security Administration's planned exploration of developing "'case costs' based on diagnostic-specific groups as determined through AUTOGRP analysis...[to] be used as the basis for reimbursement control in hospitals." "Profiles of resource consumption for each patient group will allow the generation of budgets on a basis which is both clinically and administratively meaningful" (29).

The equivalent of DRGs at that time was a computer method of assigning patients by several case characteristics to a medically coherent and statistically significant group. DRGs were accepted and used as a sophisticated definition of a hospital's multiple products. They were also useful for finding unusual aberrations in LOS, which were felt to relate to increasing hospital costs. There was great theoretical interest in using DRGs as a product unit for pricing and reimbursement decisions.

A trial system of pricing by patient case was instituted at one hospital in Connecticut, also under the Social Security Administration - Health Care Financing Administration (SSA-HCFA) contracts. In Connecticut, all hospitals were on a uniform chart of accounts. This trial system used 30 cost centers in allocating costs to patient diagnostic groups -- a method of allocation on which New Jersey based its "Measures of Resource Use" (11).

However, before New Jersey's experiment, no large-scale development of this system for hospital payment had been undertaken, and no agency with authority over a sufficient number of hospitals had stepped forward to do so. Thus, the Federal contracts to the Yale research groups laid the foundations for the practical implementation that would occur in New Jersey.

2.

The Climate:

The Health Care Issues in New Jersey That Led to Prospective Reimbursement by DRGs

CHAPTER 2

THE CLIMATE:

THE HEALTH CARE ISSUES IN NEW JERSEY THAT LED TO PROSPECTIVE REIMBURSEMENT BY DRGS

> It is hereby declared to be the public policy of the State that hospital and related health care services of the highest quality, of demonstrated need, efficiently provided and properly utilized at a reasonable cost are of vital concern to the public health. In order to provide for the protection and promotion of the health of the inhabitants of the State, the State Department of Health ... shall have the central, comprehensive responsibility for the development and administration of the State's policy with respect to health planning, hospital and related health care services.... (NJSA, Public Law 1971).

* * * * * * * * * * *

> The 1971 Act is now almost three years old, but the State still has not taken over administration of the budget review program ...
>
> The process of determining 'reasonable costs' under the 1971 Act begins with the Advisory Committee asking each hospital to submit a budget which lists all expenses, old and new, the hospital wishes to be paid during the coming year.... This process is backwards. It is encouraging administrators to submit requests for excessive spending....
>
> The most serious weakness in the [New Jersey Hospital Research and Educational Trust] staff analysis is the absence of objective standards of hospital productivity or efficiency.... [H]ospitals have a financial incentive to keep patients as long as they can, since reimbursement is figured per day, not per case.
>
> The current budget review system has been ineffective as a mechanism for holding down New Jersey hospital costs.
>
> ... [T]he result is an almost total erasure of a forward looking law that might have brought great public benefits (5).

The Climate's Evolution

New Jersey has a long history of concern for hospital costs and payers' reimbursement rates, primarily because of a public policy to keep Blue Cross rates reasonable. In many States, the cost of the Medicaid program has been of greater interest (63). New Jersey was one of the last to join in the Medicaid program before the original application deadline, and then did so with a State plan that met the minimum requirements, choosing not to cover the medically needy. Eventually, this added to the hardship of certain health care providers. The concerns of and about the private payers over rising hospital costs actually initiated the mandated cost containment process, and authority was established in the New Jersey Department of Health (NJDOH). When the State agency finally took up its responsibilities, however, it was found that the requested payers using cost-based reimbursement really began to pay less to hospitals than other payers. Some hospitals, heavily dependent on revenues from regulated payers, began to suffer genuine losses.

In 1938, the State legislature voted enabling legislation for the Hospital Services Corporation of New Jersey. Even at that time there was concern about the effect of rising hospital costs on insurance premium rates. The 1938 statute made the Commissioner of Banking and Insurance responsible for determining that hospital charges were neither excessive nor inadequate, although it did not propose any mechanism for analysis and control. By the 1950's, hospital costs rose, followed by Blue Cross premiums. By 1963, the commissioner began setting annual ceilings -- a maximum per diem that hospitals could charge Blue Cross. There was no review system for hospital budgets or costs. The hospitals submitting requests to Blue Cross in the top 10 percent were simply disqualified and asked to reconsider their budgets. In effect, the ceiling depended on what the bottom 90 percent of the hospitals wanted to charge. Rates continued to increase year after year, and Blue Cross premiums rose accordingly. During some years, Blue Cross appeared twice before the Insurance Department to request increases in subscriber rates. In 1966, Governor Richard J. Hughes appointed a special task force to examine the problem.

This task force reported a year later that "sharp increases in Blue Cross rates are not entirely explained by improved services, overutilization, and wage increases. In addition to those factors ... the Committee finds that a share of the increased costs can be attributed to the absence of an adequate supervisory mechanism outside of the individual hospital" (75).

Opposition by the New Jersey Hospital Association (NJHA) to any governmental supervisory mechanism led to proposal of an alternative, a special advisory committee within the association's Hospital Research and Educational Trust (HRET). This committee would review budgets the hospital submitted. It would suggest possible economies and review appeals from those whose budgets exceeded the ceiling rates set by the Insurance Commissioner. The Insurance Commissioner approved such a control mechanism as well as the specific committee members proposed by NJHA. No public or government representative sat on the committee, which was staffed by the Association.

In May 1969, and again in December 1969, increasing hospital costs forced Blue Cross to ask the commissioner for higher premium rates. Together the two filings represented a request for a 73-percent increase in premiums. The commissioner appointed a special counsel to the Department of Banking and Insurance to investigate rising Blue Cross rates and make recommendations to solve the chronic problem. Numerous public hearings and conferences were held; the counsel's final report criticized the entire hospital rate-making process and offered a plan for its complete reform. The report called for much greater involvement of a State agency in regulating hospital costs, and for budget review to take place before a hospital's fiscal year began and money was actually spent. The report also recommended a thorough review of the per diem method of reimbursement and its comparison with alternatives, including a "per case" method (79).

The recommendations in this report were not implemented, and Blue Cross premiums continued to rise. Finally, in May 1971, with support from the Governor, the Commissioner of Insurance, the Commissioner of Health, and particularly legislators who held the interests of Blue Cross, the Health Care Facilities Planning Act was passed, giving the State unprecedented power over the health care industry in New Jersey. Responsibilities for health care planning, a certificate-of-need requirement, and health facilities licensing were moved to the Department of Health. The Commissioner of Health was given the task for approving hospital charges to "government agencies" (later construed as Medicaid), and shared responsibility with the Commissioner of Insurance for regulating hospital charges to Blue Cross. For the protection of all patients from improper hospital accounting practices, the act further required that the price of hospital services be "derived in accordance with a uniform system of cost accounting approved by the Commissioner of Health." The elements and details of hospitals' total costs were to be taken into consideration, according to the new law.

A new Governor, Brendan T. Byrne, was inaugurated in January 1974. In February 1974, the report Bureaucratic Malpractice (5) was published. It strongly criticized the Department of Health's failure to implement the 1971 act. Among those associated with the nonprofit Center for the Analysis of Public Issues, which authored the report, were persons to become members of the new administration, including its Cabinet.

The SHARE System

The new administration expected the Department of Health to implement 1971 law. In preparation of setting hospital rates for Blue Cross and Medicaid by 1975, the department required that hospitals submit their budgets. The cost-reporting forms developed for the HRET advisory committee's review were used as a transitional system -- time was needed for consultants to develop a standard hospital accounting form. A consulting firm (then Haskins and Sells) developed a cost allocation and reporting system, the Standard Hospital Accounting and Rate Evaluation (SHARE). By regulation, this system became the way all hospitals had to report their expenditures to the department. For purposes of analysis, the department also grouped hospitals by location (urban, rural, and suburban), bed size, and teaching characteristics; and established a target percentage increase in Blue Cross and Medicaid per diem rates. (In the system's first year, the State tried to set a target of 2 percent, but had to compromise at 9 percent.) Data submitted on SHARE forms, based on 9 months of actual expenditures and 3-month estimates, were used to calculate per diem rates prospectively in time for the hospitals' calendar year.

A newly established staff in the Department of Health, the Health Economics Service, then screened proposed budgets based on SHARE forms by cost centers and within peer groups. Any proposed costs 10 percent above the median of their class were challenged. If such cases could not be negotiated in desk conferences with the analysts, they were heard by a hearing examiner within the department. (Later, the State enacted amendments to its Administrative Procedures Act establishing an Office of Administrative Law. Appeals were then heard by this office's judges.) The final per diem Blue Cross rates did not include the challenged costs unless the hearer had established their reasonableness.

By 1975, the department had created a staff who were performing budget review and rate setting for Blue Cross and Medicaid, had mandated uniform accounting and reporting, and had established hospital peer groups for comparison. The concept of peer groups and the system's sufficiency to account for hospital "uniqueness" had been upheld by the courts (80).

Proposed administrative rates (PARs) were issued for 1975, and were followed by a flood of appeals. Promptness in issuing final administrative rates (FARs) was severely compromised. Final 1975 rates for many hospitals were not completely adjudicated until 1978.

Following the appeals process, certain refinements were made to SHARE. In 1976, screens were established for clusters of hospitals, and challenges occurred only when a hospital failed this joint screen. Regression studies proved that this method did catch excessive costs. Hospitals were offered two options: 1) the usual review and screening by cost centers, 2) or a new global rate -- a percentage per diem markup for inflation atop a budget set by past performance. This amounted to an annual percentage applied prospectively to a hospital's total expenditures. Hospitals would thereafter have freedom to allocate Blue Cross and Medicaid revenues as they wished.

In one year, the department had assumed the role intended by the 1971 legislation and responded to many of the criticisms raised in Bureaucratic Malpractice (5). New Jersey's hospitals were no longer automatically receiving the total budgets they requested. There were some signs that this system was succeeding in containing the costs of the payers it covered. In 1975, New Jersey hospitals' proposed budgets would have resulted in a Blue Cross per diem increase of 17.3 percent. But after budget review, successful challenges, and the passage of much time, this figure was reduced to 12.3 percent. However, the new system of cost containment had a more ominous result for payers using charge-based reimbursement: By 1977, Blue Cross payments to hospitals were 27 percent less than unregulated payers.

In 1975, the Commissioner of Health and the Commissioner of Insurance made several observations:

1. Calculating the rate per diem seemed an extremely limited incentive to save, and certainly offered no basis for analyzing the unique hospital needs so often raised in appeals of the prior year's excessive expenditures or LOS.

> The per diem reimbursement for all classes of patients, as presently constituted, is unfair and misleading. Since [it] is essentially a system of aggregating and averaging, it is unfair to the consumer who is paying effectively for all services, not just those he uses. It is unfair to the hospital since those with difficult case mixes requiring greater resources for each patient appear to be at higher cost, although the costs for rendering the needed services may be quite reasonable (21).

2. Because of the failure to account for the different kinds of patients in various hospitals, although defining peer groups may have done so to some extent, "reasonable costs" may have been arbitrarily defined.

> The system as presently constituted is not regarded as the best to carry out the public policy intended by New Jersey's statute. There presently is no objective and accurate way to identify case mix and relate costs to it, thus leaving both parties, in reaching agreement on reasonableness, at the mercy of accepted myths, subjective standards or intuitive 'numbers' as to the degree of difficulty of the mix, and an underlying discomfort on how equitably the system is working in relation to all hospitals (21).

3. Cost-based reimbursement, allocating costs by traditional hospital accounting, and traditional designation of cost centers were all questioned, particularly because they seemed to offer little incentive to save.

> The length of stay incentive problem is compounded by the use of cost as a basis of reimbursement. The reasonable measure of a hospital financial manager's effectiveness is his success in maximizing reimbursement. The more cost is increased, the greater the revenues. Costs can be skillfully redistributed over different cost centers with the effect of escaping peer costs screens. Another problem for the regulator and opportunity for the ... financial manager results from a system where some patients pay costs and others pay charges, compounded because the ratio of costs to charges can be manipulated. Some opportunities for business gamesmanship will doubtless be found in any reimbursement methodology. The regulator is charged with the appropriate identification of cost and the design of a financial incentive to monitor and minimize such practices (21).

4. The potential for cost shifting (i.e., having the true costs of care paid by patients or payers other than by those who incurred the costs) earned the enmity of unregulated payers and the widening gap between payments based on costs and those based on charges led certain hospitals to suffer, as was evident from their appeals. The department kept computer records of patient days by payer taken from the SHARE forms. At that time, Blue Cross accounted for about 28 percent of patient days in the State's hospitals; Medicaid 11 percent; Medicare 40 percent; and self-insured, out-of-pocket, commercial payers and "other" about 20 percent. The patient days frequently lumped as "other" were often those devoted to charity care. In a few inner city hospitals, unreimbursed care of indigent people equalled as much as 19 percent of all patient days. Because of the environments where they had elected to stay, often for religious reasons, these hospitals had fewer commercially insured patients to whom costs not covered by Blue Cross, Medicare, and Medicaid could be shifted, their endowments and philanthropic support were also shrinking. These results of the cost containment system were troubling for an administration with a policy of encouraging jobs creation in the cities at a time when employers, such as hospitals, provided these jobs. The system contained costs dramatically for some payers, but left such inner city institutions with few on whom to depend for help with their rising deficits.

5. The SHARE system was of little concern to physicians, who might order a therapeutic diet or a special procedure with no idea of its cost. Yet physicians were the major decisionmakers and the major users of hospital resources.

> To be effective, regulators and managers must build a language to the physicians. It is a reflection of the state-of-the-art that appeals in industry are managed by lawyers and accountants and therefore examine problems of allocation and finance. It [should] become possible to trace

the relationship between the physicians' decisions and their effect on costs. From this base the proper questions can be framed to deal equitably with issues of effectiveness, quality and efficiency in patient care (39).

Because of these problems, the commissioners began seeking again for a system to satisfy their mandates.

The department's first application for support, in 1975, was to the National Center for Health Services Research. The application proposed to develop a reimbursement system that would take hospital uniqueness and quality of care into account and somehow relate these to rates. When this application was denied, the department approached the Social Security Administration's Division of Health Insurance Studies, Office of Research and Statistics, at a time when Congress itself was encouraging more demonstrations under Section 222 of Public Law 92-603. Although the Office of Research and Statistics did not print demonstration guidelines until after its contract with New Jersey, it supported prospective payment systems. It believed that retrospective reimbursement failed to provide incentives for cost containment since those who paid retrospectively had to absorb costs already incurred (66).

When guidelines for demonstrations were published, they specified the following conditions for State reimbursement experiments (69):

- Mandatory hospital participation in prospective rate setting
- Uniform systems of accounting and reporting hospital data
- Prospective rate setting with a focus on total hospital expenditures and utilization factors
- Coverage of all payers
- Close coordination of health planning and rate setting
- Statistical screens for determining reasonable costs
- An appeals or exception process for hospitals to challenge the system

New Jersey had authority to mandate hospital participation in prospective rate setting since 1971. The State had already set in place a uniform accounting and reporting system and had developed a screening process and an appeals mechanism. The administering agency, the Department of Health, included health planning and rate setting in the same division.

But New Jersey did not have legal authority to set rates for all payers. Total hospital expenditures were not covered in its system, nor did the system produce a prospective revenue budget within which hospitals had to live. Utilization factors were considered in planning, but not specifically in setting rates.

3.

The New Jersey Experiment:

Using DRGs to Price Hospital Care And To Set Reimbursement Rates

CHAPTER 3

THE NEW JERSEY EXPERIMENT:

USING DRGS TO PRICE HOSPITAL CARE AND TO SET REIMBURSEMENT RATES

Before the Social Security Administration (SSA) requested proposals for demonstrations of prospective rate setting, the New Jersey State Commissioner of Health negotiated a contract with Puter Associates (a corporation created by some of the Yale research faculty) to modify and apply their Diagnosis Related Groups (DRGs) to New Jersey's inpatient experience and reimbursement system for hospitals. The commissioner felt their models and experience offered a way of classifying patients by several indicators of resource consumption that could produce a more representative unit for pricing care than a patient day.

The Health Care Administration Board (established by the 1971 act (see ch. 2) to approve all regulations on rate setting, health planning, certificates-of-need, and health facilities licensing proposed by the commissioner) then formalized the requirement that all New Jersey hospitals submit medical abstracts to the department on all discharged patients beginning January 1, 1976. (See attachments A, B, and C for the original reporting requirements, an indication of how the reported data were used to assign DRGs, and the 1979 modifications in required reporting.) The required patient data are similar to those recommended for the Uniform Hospital Discharge Data Set (UHDDS), which was developed and encouraged by the U.S. Department of Health, Education, and Welfare (70).

A regulation had also been adopted in the summer of 1975 on medical and financial reporting systems and forms to initiate the Standard Hospital Accounting and Rate Evaluation (SHARE) system (see ch. 2). Together, these two regulations provided the data and reporting systems that made possible the prospective reimbursement system based on DRGs. Uniform information about patients and uniform cost data were available to the New Jersey Department of Health.

The major development tasks now before New Jersey were to discover a way to measure and segregate costs for allocation to individual patients rather than to hospital days, and then to relate these costs to DRGs. Another obvious task was to determine problems, inequities, and inaccuracies in the program's concepts, and correct them if possible.

The State's proposal to SSA, which resulted in a 2-year contract beginning in November 1976, stated the following goals:

> ...[to] establish a hospital's case-mix profile, establish reasonable costs related to that case mix, reimburse on these bases promptly, approve reimbursement equitably among payers according to the kinds of patients for whom they are responsible, and reward hospitals which perform well under these standards (21).

The following tasks were promised for the years 1976 to 1978:

- Obtain required data on costs, revenues, patient volumes, medical abstracts, and cost finding from individual hospitals
- Assign patients to DRGs on the basis of discharge abstracts

- Combine hospital financial and other data, along with data from discharge abstracts, to screen base-period costs and possibly to develop a subsystem for pricing nursing costs by DRGs
- Develop an economic factor to apply to hospital base-period budgets to cover general inflation
- Set a prospective rate
- Allocate costs to payers
- Issue prospective payer shares to hospitals and notify payers
- Monitor economic factors and issue industrywide increases
- Develop and apply quality outcome screens
- Develop a system to evaluate rate increases requested because of special circumstances
- Review proposed increases over base-period levels for noneconomic factors
- Hold conferences with individual hospitals on nonapproved items, and hear formal appeals for those not resolved
- Establish statewide limits for certificate-of-need approvals for expanding the services of hospitals or their plants
- Track key indicators such as admissions and lengths of stay (LOS), as well as costs, to anticipate potential problems
- Update screens annually, review the performance of all hospitals, and provide incentives to those hospitals that have constrained costs while maintaining or improving quality and productivity.

The New Common Denominator: DRGs

The attempt to regulate hospital costs implicitly considered the hospital industry as a public utility. However, appropriate measures of performance for this industry -- unlike costs per kilowatt hour or per cubic foot — were missing. The SHARE system attempted to apply some techniques of utility regulation. Institutional cost centers were developed and then grouped in homogeneous classes in accordance to hospitals' characteristics, i.e., size, location (urban or rural), and service area. Thus, the performance of one hospital could be compared with that of a peer as one could compare one water company with another.

But "... water companies supply only water, and the application of this straightforward technique, peer grouping, has met with frustration in an industry where the kinds and amounts of services demanded and provided vary not only between institutions, but among individual consumers.... For instance, the resources a hospital must devote to treating an adolescent with appendicitis differ significantly from those which must be applied to an elderly cancer patient" (22). A common denominator was clearly needed for meaningful comparisons between hospitals with different kinds of patients requiring different resources for their care.

The first step was to test the computerized patient classification system (the specified DRGs) using the more than 500,000 discharge abstracts of New Jersey patients' that were available as a result of the 1975 regulation. (New Jersey hospitals discharge over a million patients each year.) With existing software, it was possible for computers to assign patients to DRGs using data from any one of the seven medical abstracting systems in use in the State: 63 hospitals used the New Jersey Utilization Program (NJUP), 43 used the Professional Activity Study (PAS) Commission, and 5 used independent abstracting systems. A few of the original total of New Jersey's 118 general and speciality hospitals had yet to join an abstracting system.

The original AUTOGRP partitioning system was reexamined with New Jersey data by a group of physicians (some had assisted the Yale researchers and some were New Jersey practitioners). The following five variables were still found to best explain the differences in resource consumption: primary diagnosis, secondary diagnosis, primary procedure, secondary procedure, and age. LOS was still used as the proxy for resource consumption. This analysis produced 383 DRGs (from Yale's original 317), which were then tested with other data sets and found to be stable. That is, they appeared to represent uniform groups of patients (patients treated in a similar manner) in other areas of the country. It was recognized, however, that "advances in medical techniques and changes in medical practice will have an effect on the treatment of certain cases.... A cure for some cancers [will] probably have a drastic effect on the resource utilization distribution for certain of the major diagnostic categories" (22). Thus, the New Jersey project predicted the need to monitor and modify DRGs from time to time.

A few exceptions were necessary to apply the AUTOGRP analysis assigning patients to DRG. Decisions had to be made regarding the costs of so-called "outliers" (i.e., patients whose resource consumption or LOS is atypical for a hospital inpatient, either overall or within a given DRG). These kinds of patients obviously used hospital resources differently. In the project's first phase, those patients who died were assigned to a DRG, but were excluded in calculating the average LOS for the DRG. The phenomenon of outliers with abnormally low LOS was also identified for further study. If outliers were included in developing a standard for LOS or for price, the mean value of resource use determined for a DRG might be skewed. Therefore, trim points (statistical cutoffs for days which are high and low ends of a typical LOS for any given DRG) were calculated to sort standard DRG cases from outliers. This allowed different methods for pricing outlier cases and for examining such cases in more detail.

In the first analyses of New Jersey discharges, outliers accounted for 10.3 percent of patient days, but for only 1.9 percent of admissions.* This pointed to several issues for further analysis: 1) such data could help refine DRGs in peer review or clinical study; 2) they could point to problems that planners should address, such as the lack of rational discharge planning or of nursing home or convalescent beds; or 3) they could indicate where high technology equipment could be more appropriately located in light of its efficacy for certain types of patients.

---

* For 1980 rate setting, based upon the original trim points and 1978 statewide abstract collection, outliers accounted for 3.1 percent of the discharges. For 1981 rate setting, based on 1979 data, LOS outliers accounted for 18.8 percent of discharges statewide. This increase was due primarily to the revision of trim points (49).

Any national application of DRGs to describe hospital case mix, especially for use in rate setting, must take into account such outliers and the fact that they may vary by region, by hospital teaching characteristics, or by major centers of specialty care. In a patient universe as large as the Nation's, however, an administering agency such as the Health Care Financing Administration (HCFA) may find variations to be less significant statistically, and therefore set trim points separating outliers from case clusters differently than is done in New Jersey today. Nevertheless, some provision must be made for outliers.

By March 1977, every hospital in New Jersey that had submitted its discharge abstracts was given its case mix profile of 383 DRGs for the first half of 1976.

The next task was to develop techniques to allocate costs to DRGs (cost finding and cost allocation) and to again examine New Jersey data by AUTOGRP analysis, this time using total allocated costs as the dependent variable rather than LOS. This analysis would give the project a more precise measure of resource consumption.

Overview of Cost Finding

Cost finding and the use of allocated costs to develop a rate had two goals:

- Developing a prospective rate system based on DRGs rather than on patient days, and
- Providing hospital managers, trustees, and medical staff with the incentive to reduce costs without sacrificing quality.

While attempting to achieve the first goal, the second was always kept in mind. The New Jersey project adopted the premise that incentives would best occur if information was furnished to stimulate administrators to work with their staffs in identifying and solving problems. The price per case had to be developed so that essential management information was made available.

The department explained its intentions this way:

> " ... by providing a strong payment incentive and linking it directly to operational efficiency, the focus of a considerable amount of industry energy and expense currently devoted to reimbursement maximization might be redirected and harnessed toward developing institutional efficiency and effectiveness thus saving the rate paying public (24).

General Data Requirements

Cost finding for DRGs requires three kinds of data: patient medical data, hospital financial data, and patient billing data. The department decided it would use data already available whenever possible.

Patient Abstracts. Patient data from medical discharge abstracts were available to the department as of January 1976. In this regard, no changes in hospital reporting were required. However, some measure of patient resource use had to be developed to determine a price per case. This statistic would be used to allocate the total costs of the hospital to each of its patients according to each patient's DRG. After much work with task forces, relying on relevant professional associations and other advisors, "Measures of Resource Use" (MRUs) were developed for patient-care cost centers (tab. 3-1).

Table 3-1 demonstrates that institutional costs had already been separated in pricing the resources used for patient care. Such overhead costs are fixed regardless of the kinds of patients treated. These are administrative and maintenance costs, including those of fiscal services, malpractice insurance, interest, utilities, the physical plant, and the nonpatient-care portion of certain general services. This demarcation of costs is captured in the DRG logo (fig. 3-1), which was carried on all materials the department's DRG project produced.

Hospital Financial Data. Financial data that were comparable across hospitals were sought to overcome the hospitals' individual methods of reporting revenue and cost information. Summary data were available through audited financial statements. More detailed information had been collected on Medicare Cost Reports (HCFA form 2552). As a State government that had a role in setting rates, New Jersey established uniform cost reports (the SHARE forms). Other payers, such as Blue Cross, required somewhat different reports.

Project staff—experts in econometrics, hospital accounting, and data processing—met with outside experts to examine the various reporting systems and decided to use the SHARE Uniform Cost Report with modifications. Since the goal was consistent information to compare hospitals' costs, uniform reports with information on specific cost centers (e.g., laboratory, radiology, etc.) were deemed more useful than reports only containing information on total resources. The price per case would be derived from the case's resource components. For example, if a cost for a given DRG case were $100, the SHARE reporting would indicate how much of this total cost was attributable to the laboratory, the operating room, etc., for each hospital. This information could then be developed to compare hospitals with respect to each cost center's relative contribution to the total cost per DRG.

Billing Data. The patient's medical discharge abstract mentioned patient days, but not charges. These were needed to relate the apportioned overall costs from the SHARE reports to each individual patient, and thus derive a DRG price. Therefore, after the strenuous process of publication and hearings required under the State's Administrative Procedures Act, a regulation was adopted that mandated hospitals to submit bills they issued beginning in 1977 (see attachment D). The Health Care Administration Board's approved the regulation by a vote of only four to three with four abstentions and two absences. The key requirement of this regulation was that the identification number on the patient's discharge abstract be the same as the one on his or her bill (fig. 3-2).

Hospitals were classified such that those less capable of producing automated bills or timely medical abstracting had additional time. This arrangement -- allowing hospitals time to enter the system according to their capabilities — was carried over into the future Federal contracts and State regulations. Rather than develop a system from which certain institutions were permanently exempted, general rules were established so that in time all patients and all acute-care hospitals in New Jersey could be compared.

Table 3-1

Cost Centers* and Measures of Resource Use (MRUs) in the Case-Mix Accounting Model

Cost Center	Measures of Resource Use
Nursing Services	
RNS: Registered Nursing Services	Relative Intensity Measure**
LPN: Licensed Practical Nursing Services	Relative Intensity Measure**
ATT: Nursing Attendants	Relative Intensity Measure**
Ancillary Services	
ANS: Anesthesiology	Charges
BBK: Blood Bank	Charges
CCA: Cardiac Catheterization	Charges
CSS: Central and Sterile Supply (Med-Surg Supplies)	Charges
DEL: Delivery and Labor Rooms	Charges
DIA: Dialysis	Charges
EDG: Electrodiagnosis	Charges
LAB: Laboratories	Charges
NMD: Nuclear Medicine	Charges
ORR: Operating and Recovery Rooms	Charges
OPM: Other Physical Medicine	Charges
PHM: Pharmacy	Charges
PHT: Physical Therapy	Charges
RAD: Diagnostic Radiology	Charges
RSP: Respiratory Therapy	Charges
THR: Therapeutic Radiology	Charges
General Services for Patient Care	
DTY: Dietary Services	Patient Days
HKP: Housekeeping	***
L&L: Laundry and Linen	***
MRD: Medical Records	Patient Days

*Variable costs for direct patient care.

**The study to develop Relative Intensity Measures by DRG for nursing costs continued throughout the New Jersey project. For setting rates through 1983, patient days were used as the MRU.

***

The Direct Patient care portion of these costs are allocated directly to the nursing or ancillary center that utilizes the service and then the appropriate Measure of Resource Use of the Center is applied. Adapted by Jo. A. Surpin From: Finley, Joanne, E., Reiss, John, B., Kalison, Michael, et al., "A Prospective Reimbursement System Based on Case-Mix," New Jersey State Department of Health, Annual Report, vol. 1, November 1977, p. 43.

Figure 3-1

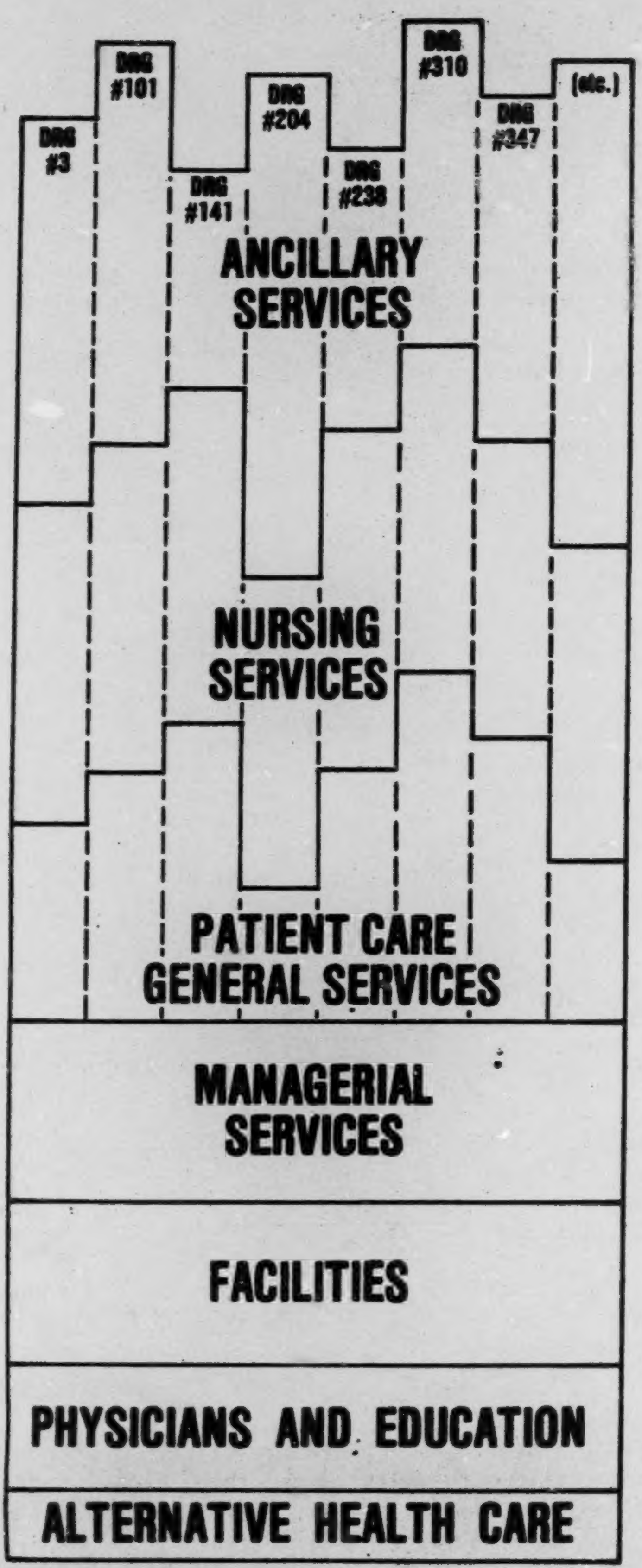
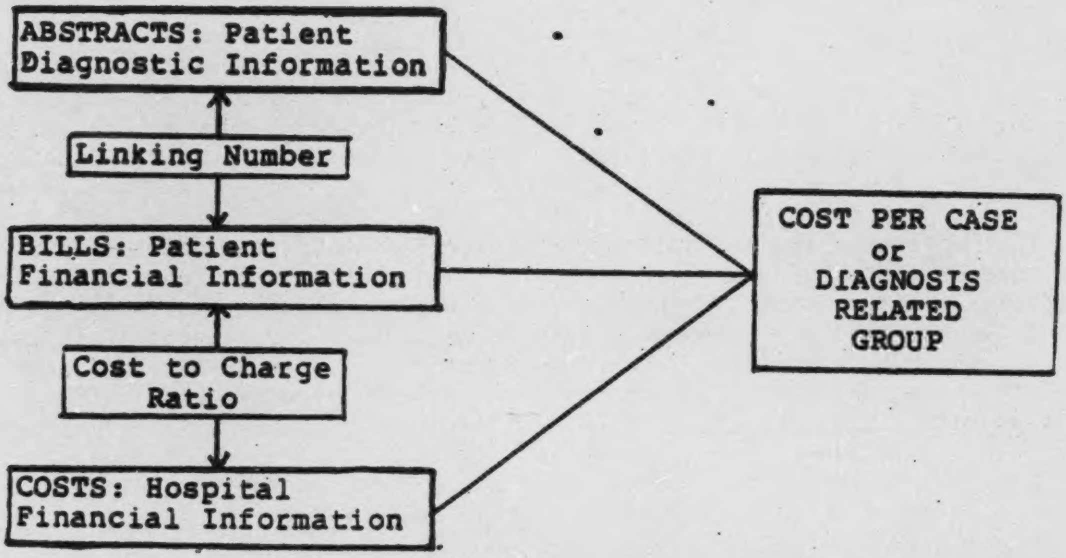

DRG #3
DRG #101
DRG #141
DRG #204
DRG #238
DRG #310
DRG #347
(etc.)
ANCILLARY SERVICES
NURSING SERVICES
PATIENT CARE GENERAL SERVICES
MANAGERIAL SERVICES
FACILITIES
PHYSICIANS AND EDUCATION
ALTERNATIVE HEALTH CARE

Figure 3-2

Rate Setting in New Jersey

Patient Cost-Finding


ABSTRACTS: Patient Diagnostic Information
Linking Number
BILLS: Patient Financial Information
Cost to Charge Ratio
COSTS: Hospital Financial Information
COST PER CASE or DIAGNOSIS RELATED GROUP

From: New Jersey State Department of Health, The DRG Manual. Tenth Quarterly Report to the Health Care Financing Administration, 1979.

Technical Problems in Deriving a Price for Each DRG

No precedent existed for correlating the three kinds of data, that is, medical abstracts, hospital cost reports and billing information. One national benefit, in terms of technological development of using one State as a laboratory is to learn what can be done, and what cannot be done, without intensive refinement. Probably the most difficult and time-consuming tasks for the staff of New Jersey's DRG project in its experimental phase were in solving the technical problems of acquiring accurate, comparable data and of developing the computer techniques to merge these data and derive a cost per case.

When describing the technical problems and their solutions, no complete demarcation can be made between the initial development contract with HCFA and the later contractual modification for implementation. What was learned in the first phase often could not be applied until the second phase was well under way.

Patient Abstracts

Abstracts were received from several data processors and converted to a common format. They were edited, and records with apparent errors were returned to hospitals for corrections. Finally, all revised records were assembled in an annual file.

Much attention focused on the quality of the abstracts' data; specifically, on the codes for diagnoses and procedures. A State study (50) investigated the reliability of abstract data in much the same way as had prior national studies (32). Estimates of error rates were between 20 percent and 35 percent for both diagnoses and procedures (28). When New Jersey staff tested a re-abstracted sample by payment rates, the net impact of change in DRG assignments on payment was virtually zero.

However, the careful identification of problems in the abstracts, as well as of other problems that emerged when hospitals actually began to be paid by DRGs, led to a number of improvements:

- The new ICD-9-CM* DRGs (a total of 467) and corresponding new computer analysis called GROUPER
- Training sessions for medical records personnel (carried out with the assistance of the New Jersey Medical Records Association)
- Training manuals and more clear, precise definitions for coding principal diagnoses.

Hospital Financial Data

There was much concern that the hospital's own figures were used to establish the ratio of costs to charges as a statistic to allocate the cost of ancillary resources consumed by patients in any DRG. A data subcommittee that met many times to advise the department examined other methods of allocating the cost of ancillaries, including relative-value units, and finally concluded that these methods would be too costly and time consuming for the hospitals. However, the many discussions, special studies, simulations of alternatives, and letters that flew back and forth on the topic are exhaustively discussed in the department's Third Quarter Report, Volume 1, and its appendix (41).

---

*International Classification of Diseases-9-Clinical Modifications

The Executive Summary (58) in this report noted the following defense of using charges in calculating reimbursement:

> Treatment of a broken hip (DRG 347, open reduction) will require a number of procedures from the radiology department; several views of the pelvis, x-rays of the femur, x-ray of the spine and so forth; it will also require various procedures and items from at least the laboratory, central and sterile supply, physical therapy, pharmacy, operating and recovery rooms, anesthesiology, ... and of course nursing and general services.... In sum, the effect of an untoward x-ray pricing decision is neutralized in two ways: within a given DRG it is combined with numerous other pricing decisions operating in different directions across cost centers averaged over all admissions under that DRG, and a desirable statistical randomness obtained ... its undesirable effect is spread over various DRGs.

Billing Data

The single biggest problem with processing billing data was coordinating input from over 60 sources -- shared processing systems and individual hospital systems. Patient abstract data was acquired from a limited number of systems, but billing formats were multiple and differed by payer requirements. Furthermore, considerable time and expense was often required to salvage billing data (28). Nevertheless, the department solved the computer problems and obtained the necessary billing data. A description of the problems and their solutions in this process as well as of the processing systems themselves are in a "Handbook for Bill/Abstract Merge" appearing in its Ninth Quarter Report to HCFA (46). A more workable solution to these data merging problems occurred with the development of the Uniform Bill-Patient Summary (UB-PS). Wider adoption of a DRG-based payment system may require a uniform reporting format similar to New Jersey UB-PS, mandated for all participating institutions. To do so in the New Jersey project, a separate Federal waiver was needed from the requirements of the Medicare/Medicaid billing form. A national system would merely require changes in Medicare regulations. The UB-PS (attachment E) was adopted by regulation in August 1980 for use in all New Jersey hospitals by January 1981. This replaced the earlier billing regulation that had been so narrowly adopted. More important, it began to solve many technical problems, especially timing ~~and~~ data processing problems.

The importance of the UB-PS is explained in the preamble to the regulations (52):

> The purpose of this rule is to provide the basis for a single patient data reporting system.... The proposed rule is based on an expanded UB 16-78, a uniform billing form developed by the American Hospital Association and other interested parties, and is designed so as to: a) coordinate and consolidate the requirements on hospital billing systems to allow all payers to be billed through a single common format rather than the current

system of different claim forms for each payer, b) simplify claims administration and coordination of benefits of third party payers through the receipt of bills from all providers, in a common format, c) ... satisfy Department of Health reporting requirements for bills and abstracts, thereby eliminating a costly and difficult process..., d) eliminate duplicative reporting both to the Department and third party payers, e) allow for common and consistent reporting of revenues for services related to patient care..., and f) promote uniformity and accuracy of patient data reporting

Policy Issues

Cost Finding for Physician Services

One question frequently asked about the New Jersey DRG project has been how the costs for the physicians' services rendered to hospital inpatients were determined.

Cost finding during the experimental phase was designed to fit New Jersey Blue Cross definitions of "covered inpatient costs," as were SHARE reporting forms. Such information is also similar to that on Medicare cost reports. Thus, the first step in cost finding was to apportion the institution's total costs between inpatient and outpatient care. Inpatient costs were then separated into those of direct patient care (allocated to DRGs through the MRUs), indirect costs (fixed institutional costs and those of general services not related to patient care, neither allocated to DRGs), and "other costs" (the category to which physicians' costs eventually had to be assigned).

During the experiment, 23 sample hospitals voluntarily submitted their expense accounts for internal ancillary services together with other 1976 data to see if such technical problems as allocating physicians' costs to DRGs could be resolved.

The second (41) and third (42) quarterly reports reflected the difficulties:

> The reporting of hospital based physician costs within SHARE centers ... has received substantial consideration. Where such physicians use the hospital's billing system or are salaried by the hospital, their costs are reported by SHARE. Where such physicians bill independently of the hospital's billing system, their costs are not reported.... Both cases occur among the sample hospitals (41).

While the hope was expressed that a uniform reporting form could solve this problem, "imputed values may have to be used based on the physicians' contractual agreements with hospitals" (41). Thus, copies of such contracts were sought through the cooperation of Blue Cross and the Regional Office of the Bureau of Health Insurance.

The passage of the third quarter (42), however, revealed the following:

> ... differing fee arrangements between ancillary service physicians and hospitals impair comparability of reported costs among institutions.... Although physicians' contracts ... were pursued ... little has been found of value in receiving a more complete reporting of these costs than is

received by SHARE. It is likely that the Project will achieve sufficient hospital based physican reporting to include these costs in reasonable DRG cost screens in laboratory, radiology and possibly electrodiagnosis. Where the services of physicians who bill patients independently of a hospital's billing system have been included in the setting of screens, these costs will be deleted from the reimbursement rate established for the hospital.

It was noted for future research that the DRG cost-allocation model being developed by Puter retained hospital-billed physician fees and hospital-based physician salaries separately from nonphysician costs.

The technical problem and policy issue that emerged may remain to confront payers and consumers across the Nation. The separated data on physician fees and salaries are used in cost finding and prospective budget building, but are not allocated to cost per DRG case. They remain in the category of Hospital Cost Adjustments, are based on reports of the hospital's actual base-year experience, and as a group can be screened and compared among institutions. They are excluded from calculating the DRG standard to ensure comparability of hospital costs.

Addressing physician costs in this manner was believed to accomplish the following:

- Hospitals that had hospital-based physicians were not penalized, and

- Changes in compensation arrangements could be easily accommodated in developing prospective budgets based on DRGs.

The DRG-based reimbursement system moved toward full implementation, and the management reports produced by the department began to be examined by medical staff and administrators who were attempting to explain negative variances, i.e., expensive practices that implied disincentives. It became evident that the effect of these management reports on physician practices in admitting patients and in consuming hospital resources made the greatest contribution to cost containment. While a more precise assignment of physican services to DRGs might be desirable, the information the project received and analyzed is in terms familiar to clinicians, and for this reason has probably been the most important catalyst in bringing about the evident control of inflation in the cost of inpatient care. An option for the future may still be developing methods to allocate the costs of physician hospital services to DRGs.

The debate about payment for hospital-based physician services continued. After the passage of the amendments to New Jersey's 1971 law (NJSA: Chapter 83 Public Law 1978) the newly established rate-setting commission had to confront the issue of whether to compensate radiologists' administrative, supervisory, and teaching costs through a hospital's rate structure. A task force established by the department and the commission essentially recommended exclusion of those costs.

Cost Finding for Nursing Care

The importance of the nurse in the delivery of patient care in the hospital cannot be overemphasized. With the trend toward physician specialization and sub-specialization and with the typical specialist finding less time for the primary care of the patient, the hospital nurse is assuming a greater role in the support of the patient and the continuity of treatment. While the traditional stereotype of the nurse is that of a semi-professional helper who passively assists the physician and whose treatment role is often confined to "holding hands," rapid changes in nursing education and practice have dramatically altered the course of the nursing professional during the past 15 years.... As a part of this emerging professionalism, nursing is expanding into various skill levels and clinical specialties. Nursing care has become more progressive, involving expanded responsibilities for restoration, maintenance and prevention.... The nursing care process may now be conceptualized as involving not only the conventional interventions such as ... support, administration of the medical regimen, and health-teaching, but as including such progressive activities as nursing diagnoses and nursing quality assurance. Unfortunately, these innovations in the practice of nursing have not been paralleled by changes in the hospital reimbursement system. That is, expenses of nursing services continue to be recovered under room and board revenue. Nursing is subsumed under room and board simply because the system is not able to identify nursing services consumed by patients...(4).

Because of the lack of a method for allocating costs by DRG to nursing care, another task was proposed to the Federal Government and accepted. This task was to develop a cost-finding technique that would take into account the "relative intensity measures" (RIMs) required by different patients for nursing services as determined by DRGs. The task continued throughout all phases of the Federal contract and resulted in RIMs that will be used in setting New Jersey inpatient rates after 1983. The outcome of the RIMs study will be discussed later.

Meanwhile, prospective budgets for hospital reimbursement required an interim measure of nursing costs. The project first decided to set rates for total inpatient nursing care costs for the experimental hospitals by using modified RIMs derived from the Yale-New Haven Hospital Study. The decision was made to use the Yale RIMs because of the lack of alternative empirical data. However, in response to concerns raised by the New Jersey State Nurses' Association, the New Jersey Hospital Association, and representatives from the interdisciplinary Nursing Screens Advisory Committee about the validity of the Yale RIMs, and after considering a number of least objectionable alternatives, patient days were chosen as the immediate measure of nursing care. Meanwhile, attempts were made to develop a system that reflected the amount of direct and indirect nursing care required to treat the typical patient in a DRG.

Developing an Economic Factor*

Once a system of prospective reimbursement is in operation it should not be necessary to review budget requests each year. But a method is required to adjust hospitals' base-year costs for inflation or deflation. An appeals process, preferably one that addresses issues generic to the industry, rather than specific exceptions, completes the process.

---

*An adjustment to a hospital's budget for inflation or deflation.

Considerable effort was devoted in New Jersey to develop and refine such an "economic factor." It was not surprising that, in a period of high inflation, both the hospitals and the regulator (i.e., the State) would be concerned with this question. As Federal payers adopt prospective reimbursement of hospitals, there will be similar debate about the methods used to account for inflation.

Increases in hospital costs are generally attributed to increases in utilization, changes in the quality of care provided, changes in case mix, and changes in the prices of goods and services that must be purchased. A reconciliation process at year's end can account for changes in patient case mix and volume. An appeals process can be designed to evaluate changes in medical technology and the quality of care. Still, measures of changes in the prices of goods and services must be developed. HCFA has used the National Hospital Input Price Index. New Jersey uses its own economic factor. The SHARE regulations required the department to develop and promulgate an industrywide economic factor to account for presumptively reasonable increases in expenses due to inflation, compensation increases and other facts net of productivity increases and other cost improvement measures (51).

The first factor New Jersey used was a weighted average of the latest 12-month percentage changes in both the national Consumer Price Index (CPI) and the average hourly earnings of manufacturing employees in New Jersey as reported by the Bureau of Labor Statistics. This factor was applied globally to covered inpatient costs (as defined by Blue Cross), giving a weight of 2/3 to earnings and of 1/3 to the CPI. Costs for utilities, malpractice, and depreciation were analyzed separately.

These indexes facilitated data collection and calculation but were suspected of being simplistic. In October 1976, the department held a public hearing on the reasonableness of the economic factor presided over by a retired judge, Sidney Goldman. In the hearer's report (22a), Judge Goldman concluded:

> The Economic Factor as presently stated and applied is lacking in refinement and fairness. The use of an economic factor with only two components must be described as a rough approximation to what a more refined procedure would produce.

The hearer established the following first goals for refining the economic factor:

1. The factor should be external to rate-setting policy.

2. It should be determined independently of any factors to encourage improvements in hospital productivity.

3. It should be accurate and timely, given the constraints of its administration.

4. It should be constructed in such a way as to prevent the hospital industry from monitoring itself, and hence contributing to inflation in the general economy (42).

A thorough review of the literature was undertaken along with studies of the methods used by other State rate-setting agencies. Meetings were also held with these agencies. It was found that using different indexes yielded significantly different results. Finally, a mix of indexes was established as SHARE's Prospective

Rate Economic Factor. Some of these measures were suggested by a report prepared for New Jersey by John Rossman and colleagues of the Hospital Association of New York, Management and Planning Services (59).

The next step was to develop proxies to monitor price changes in the indexed cost categories. For example, the proxy for labor costs that New Jersey has used is the Employment Cost Index (ECI)-Northeast (61). In contrast, Medicare uses the Average Hourly Earnings of Non-Supervisory Workers on Private Non-Agricultural Payrolls for Hospitals. The hearer stressed that the economic factor should reflect inflationary pressures exerted in the whole economy for the same or similar types of inputs a hospital consumes, and not solely the inflation rate realized in the hospital sector. Thus, use of the ECI-Northeast was continued as it was felt to reflect a broader range of inputs than the Medicare proxy. Finally, decisions had to be made about whether the inflation factor should be calculated for individual hospitals or for the State, and whether proxies should monitor a region or the State. Rate-setting policy also had to be made about possible "pass-through" items that would not be subject to the prospective payment rate, e.g., costs of malpractice insurance, interest, etc.

Before the economic factor could be applied to a total base year's costs, a method also had to be developed to equalize labor costs. Eleven labor market areas were identified to account for different compensation patterns prevailing within the State. The resulting factor was applied to direct patient-care costs other than those for physicians. Eight categories of cost centers were used to describe salaries of hospital employees. (The information was stored in the Puter cost-allocation model.) Certain distinctions, later refined, were also made between teaching and nonteaching hospitals based on the number of residents in various services.

A detailed description of the methods for calculating the cost components of the economic factor, the relationship of cost components to cost centers and elements of cost, the proxies, and the projection method can be found in A Manual for Prospective Reimbursement Under Chapter 83, Public Law 1978, New Jersey Department of Health (35).

Thus, the economic factor in New Jersey is calculated for individual hospitals rather than for use statewide. The factor is applied to each cost component of each hospital's actual expenditures. The increase in hospital costs for inflation is added to the following year's revenue budget and reflects the actual mix of labor and nonlabor costs of each hospital. The economic factor used is monitored semi-annually to identify incorrect projections (as might occur when inflation rates decrease). If nonlabor costs have deviated by 1 percentage point from the projected amount, then an adjustment is made at the midpoint of the calendar year, and nonlabor costs reprojected for the following 6 months. Labor costs based on annual agreements, however, cannot change during a year. A recomputation of the economic factor also occurs at final reconciliation, and differences between actual costs and projections are accounted for by adjusting the following year's rate.

An economic factor is required in any prospective reimbursement system. The intensive work to develop such a factor in New Jersey underscored the following important points:

1. Proxies or indexes to measure changes in inflation should be readily available, and wherever possible should reflect the patterns of the general economy, not solely the hospital industry.

2. Where appropriate, regional indexes should be used (e.g., of the cost of nonphysician labor).

3. If a hospital-specific factor is not used, the weightings of the cost components must be updated periodically to reflect changes in expenditure patterns.

4. The factor should reflect only changes in price, not quality nor productivity.

5. Selected proxies should be periodically reviewed to ensure that they continue to measure the goods and services as intended and that they are still the best indicators available.

6. Projections for the various proxies should be monitored and a system for adjustment provided as actual data becomes available.

Financial Elements

One of the most important issues to resolve was the decision about which hospital costs outside of direct patient care should appropriately be included in the determination of DRG-based prospective rates and which should be excluded. The special cost items used in the determination of the rate, i.e. considered allowable costs, were referred to as "financial elements."

It was explicit of public policy in New Jersey that "hospital and related health care services of the highest quality, of demonstrated need, efficiently provided and properly utilized at a reasonable cost are of vital concern to the public health" (NJSA, Chapter 136 Public Law 1971). Cost containment systems were not intended to put needed hospitals out of business or to exacerbate the problems of access to care of patients with limited resources. But it was becoming increasingly evident that reimbursement controls over one or two payers, though tied in State law to a strong planning and certificate-of-need process, could neither support the most needed institutions in some parts of the State, nor inhibit proliferation of the expensive programs in more affluent areas by containing only some of the system's costs.

The original State law had in fact directed the Commissioner of Health to "determine and certify the costs of health care services ... derived in accordance with a uniform system of cost accounting ... and specify the elements and details of costs [to be] taken into consideration ...," and to establish payment rates "... taking into consideration the total costs of the health care facility" (NJSA, Chapter 136 Public Law 1971).

Nevertheless, numerous commissioner's advisory groups concerned with selecting the "elements of cost" to be included in the prospective rate had failed to reach agreement. Hospital representatives had vigorously argued to include all costs they felt they legitimately incurred, such as bad debts and care of the medically indigent (those who had no insurance or other payment resource). The department was concerned that some hospitals in precarious situations (allegedly worsened for some by the controls on Blue Cross and Medicaid rates) were borrowing heavily or using depreciation reserves to finance daily operations. This increased their allowable cost bases for calculating subsequent budgets. Payers covered by the system perceived that inequities would occur if they were expected to assume new costs. Uncovered payers felt discriminated against because they could demonstrate the charges billed to them reflected a shifting of costs to them over those that were incurred by their beneficiaries.

To resolve these problems, the Department of Health realized that the New Jersey statutes would have to be changed to establish certain financial elements as reasonable entitlements of hospitals that were "effectively and efficiently operated," and to provide authority for the department to set the rates for all payers. Furthermore, it would take a Federal waiver to bring Medicare and the Federal portion of Medicaid into this uniform payment system. With the initial Federal contract, a commissioner's advisory task force was formed on "Reimbursable Financial Elements of Hospitals and Appropriate Financing Mechanisms." Their report in November 1978 (43) contained this statement of philosophy:

> Because the financial requirements of hospitals cannot be viewed independently of the entire health delivery system, the reasonable expenditures made for hospitals must be examined in the context of public health policy and appropriate health planning goals....
>
> An ideal system of hospital budgeting includes all the financial requirements...., establishes hospital budgets on a prospective basis and includes provisions allowing hospitals to retain savings resulting from the efficient and effective operation of the facility.

The report addressed the following kinds of hospital costs:

- Patient care services
- Cost of indigent care
- Bad debts
- Education programs
- Research programs
- Restricted and unrestricted gifts net of fund-raising costs
- Grants
- Interest expense and income
- Costs not directly related to patient care
- Working capital
- Capital requirements
- Financial incentives for efficiency
- Payments and benefits

In the following chapter on implementing the system in New Jersey, the financial elements that were used in calculating payment rates will be defined and their methods of calculation will be described, but only when they differ from those allowed by the traditional system of reimbursement under Medicare.

Applying the Case-Mix Model

To recapitulate, developing cost-finding and cost allocation methods had consumed the first year of the experiment, and resulted in a computer program to arrive at prices per DRG.

Results of trial runs using this model for four volunteering institutions were presented to the Health Care Administration Board in September 1977. The department and its consultants were cautiously optimistic about allocating costs by DRG. "The distribution of patients by total DRG costs were well defined, especially for DRGs with large numbers of cases.... The results of the trial run demonstrate that patient care service costs per diem are not a valid measure of cost performance (40). (Table 3-2 shows average costs per case and per diem, and average LOS for one DRG for the four volunteering hospitals.)

> Although Hospital A's case cost was $715 and Hospital C's case cost was $997, cost per day in Hospital A was actually higher than that in Hospital C, $91 to $78 because of a respective length of stay differential of 7.9 days in Hospital A compared with 12.8 days in Hospital C. In fact, Hospital A so consistently out performed Hospital C in terms of cost that for 353 out of the 383 DRGs (92 percent), Hospital A had a lower average cost per case than Hospital C. However, per diem costs across all patients for the two hospitals were practically identical (40).

The Experiment Concluded

By mid-1977 the data base appeared sufficiently developed for a more advanced simulation. It was possible to do a trial that would actually produce DRG-based rates and management reports by which 23 volunteering hospitals could compare themselves. This became known as the New Jersey Blue Cross Experiment.

In the earlier simulations, many reporting errors were found, some due to differences in SHARE and Medicare reporting requirements. Also, calculating DRG rates for all payers seemed to produce substantial maldistributions of payments, perhaps because Medicare patients were more costly. Moreover, DRG assignments of older persons were sometimes poor because physicians had neglected to record age. Finally, there was confusion of assignment to payer for those over 65 with both Medicare and Blue Cross supplemental insurance.

The case-mix computer model was then altered to apportion rates according to the Blue Cross case mix, and the rates were adjusted to the financial elements included in the Blue Cross Provider Contract. Further, the per case rates were adapted to Blue Cross coverage, benefit limitations, and riders (44).

Though there were many frustrations in making these adaptations and trial runs, the volunteering hospitals stayed with the experiment. A 1979 DRG contract had been drafted for endorsement by the department, New Jersey Blue Cross, and participating hospitals. Each hospital had one of two options:

(a) It could accept the prospective DRG rate as final payment from Blue Cross for the year and receive the full incentive for cost containment. The arithmetic mean of cost per case (its average) had been selected for the New Jersey Blue Cross Experiment in 1979 as the most appropriate standard, with separate standards set for teaching and nonteaching hospitals. A hospital's DRG rates were hospital-specific to the extent that they were calculated in part by a percentage of its actual 1977 costs per case with a percentage of the standard. Disincentives were also calculated by this method.)

(b) It could accept the DRG rate at half-incentive (receive only half of any savings), while retaining the option of reverting to the SHARE rate at year-end; or remain on the SHARE system, while retaining the option of accepting the DRG rate at year-end at half-incentive.

Table 3-2

Cost Per Case and Per Diem by Hospital: DRG 124
Ischemic Heart Disease Except Acute Myocardial Infarction Without Operation
With Major Secondary Diagnosis

Hospital	Patients	Unit Cost	Avg. LOS	Cost Per Day
A	175	$ 715	7.9	$ 91
B	120	$1,107	11.1	$ 100
C	374	$ 997	12.8	$ 78
D	281	$1,002	8.5	$ 118

Source: New Jersey Department of Health, First Annual Report to the Social Security Administration, prepared under contract No. 600-77-0022.

Some 213,000 patient abstracts grouped by DRGs were successfully merged with patient bills, and rates were calculated. Significant aberrations were discovered. A computer run applying the department's cost-finding methodology revealed that, by their definitions of allowable costs, Blue Cross was paying less than the cost of services its patients consumed.

For example, pacemakers, nuclear medicine, and therapeutic radiology were not reimbursed under the Blue Cross Provider Contract, which had not been re-negotiated since 1971. Therefore, in adapting the case-mix model these treatments were deducted from the payment rate. Calculations were skewed, as well, by the relatively short stays of Blue Cross patients who used more services and by the large "discount" Blue Cross had already achieved through protection by the SHARE methodology (26).

Thus, the department withdrew the experimental rates it had offered Blue Cross, and Blue Cross never signed its contracts with the participating hospitals.

The department was already negotiating an extended contract with HCFA to implement a DRG-based payment system for all New Jersey hospitals and legislation was being readied to support this. The mixed signals resulting from the troubling conclusion of the Blue Cross Experiment sharpened attacks on the department's efforts to move to a statewide system.

While the Blue Cross Experiment failed to produce a reliable cost per case that was acceptable to both hospitals and payers, it succeeded in demonstrating several points:

- The three types of data could be merged and a rate produced in timely fashion
- The case-mix computer model could be adapted to any payer, but the rates generated would not be the same if payers' definitions of allowable costs differed and thus might not reflect the actual price of services consumed
- A DRG price would be more accurate if the cost and financial elements used to build rates were the same, regardless of payer.
- Costs and variances could be calculated by cost centers, permitting incentive and disincentive computations and thus allowing hospitals to analyze their differences from other hospitals and make any needed corrections.

The most convincing observation to emerge was the wisdom of building a system that covered all payers, set the DRG price, and expected payers to reimburse uniformly (except for earned differentials). Without this condition, it was felt that a system in which one payer subsidizes another would continue. Those that use a different method for determining allowable costs, although the software developed in New Jersey can accommodate it, may underpay for the services consumed by their case mix. This is not only an issue of equity. The related cost shifting involved can prevent cost containment.

The purpose of the case-mix model is to find the average regional cost for treating patients with similar medical characteristics and amounts of resource consumption. Taking into account the anticipated case mix of a hospital, this rate, allotted to all payers according to their numbers and kinds of patients, is intended to build a prospective budget within which the hospital must live. The system can also provide incentives that management can use for innovation and for policies proven to be efficient, and disincentives to correct policies that have not. Any system that allows some payer, because of its definitions of "allowable costs," coverage exclusions, or any other reason to escape its rightful obligations detracts from all the goals of the system, including cost containment.

These observations may help the reader understand why Phase II of New Jersey's project was one of refinements. DRGs could be made better and were; medical records personnel could be upgraded; coding problems could be audited by sample and solved. UB-PS forms could help solve many problems of data merge and processing. Special reimbursements for education and new technology could be considered through appeals to the commission. The most difficult problems the department faced became those of dealing with the payers.

4.

Implementing the System: Covering All Payers and All Hospitals Statewide

CHAPTER 4

IMPLEMENTING THE SYSTEM: COVERING ALL PAYERS AND ALL HOSPITALS STATEWIDE

The Political Climate

In a report on the workings of a reimbursement system such as New Jersey's, observations on the political climate that allows implementing the system may seem out of place. Congress had required in its own Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA), however, that the U.S. Department of Health and Human Services (DHHS) present proposals for a prospective reimbursement system for Medicare. Rates set by Diagnosis Related Groups (DRGs) became a part of that proposal and are now law, part of the Social Security reform of 1983. Therefore, some observations might be useful on the political atmosphere in New Jersey that permitted the passage of the legislation that enabled the DRG system,* and all the uses made of it in that State.

Within one year of launching the Standard Hospital Accounting and Rate Evaluation (SHARE) system, the New Jersey Commissioner of Health and the Governor's staff had drafted a bill, S. 1454, which was sponsored by the Senate Majority Leader. While the commissioner had plans to develop a prospective hospital reimbursement system and to base payment on cases rather than on patient days, the actual timing of S. 1454 was prompted by requests from several legislators at the March 1976 hearings of the Joint Appropriations Committee on the department's budget. Some hospitals in their districts, including a large municipal public hospital, were experiencing serious deficits under the SHARE system.

Problems identified under the SHARE system included cost shifting and the deleterious effect of basing reimbursement on costs for some payers and on charges for others. This effect was especially serious for those hospitals who relied largely on revenues from Medicaid, Medicare, and Blue Cross. The department had figures from SHARE reports giving each payer's percent of patient days for each hospital, and these could be correlated with each payer's contribution to hospital revenue. The correlation showed the system's negative impact on several popular urban hospitals and on hospitals in some rural areas with low-income agricultural and migrant worker populations. The effect of payer mix in the negative impact was evident. Another problem identified was that of the differing payers' definitions of allowable costs. None of these payers, including Medicaid in New Jersey, included a significant factor for "charity care," the coverage of the medically indigent.

The main thrust of S. 1454 was to extend the rate-setting authority of the commissioner to cover all payers. The following observations capture the important events and compromises that led to the failure of S. 1454, and, eventually, to Chapter 83.

---

* S. 446 that became Chapter 83 passed the New Jersey Senate with only one negative vote, and passed the Assembly unanimously.

> ... [S. 1454] did not include provisions for a Commission to oversee the rate-setting authority nor allowances for indigent care cost ... Public hearings were held on the bill during which sentiment ran strongly against expanding the Department of Health's mandate to set rates. Blue Cross and the New Jersey Hospital Association [NJHA] led the fight against S. 1454 and the bill died in committee....
>
> ... Department of Health officials realized they had to work with the Hospital Association in order to reach a workable compromise....
>
> ... the Hospital Association did not want rate-setting controlled by one person; it wanted the Commissioner's power diluted by the formation of an independent Commission.... The Department, while agreeing in principle to the idea of a Commission, would not have it detached from the Department of Health or the certificate-of-need program....
>
> ... the NJHA wanted allowable costs more broadly defined. Inner-city hospitals, which had the highest proportions of indigent and charity cases were clamoring for some relief from these costs ... city hospitals were now demanding that they be written into the bill (80).

S. 446, which was enacted as Chapter 83 of Public Law 1978, was the compromise reached, with further negotiations and adjustments made in the extensive hearings over which the Chairman of the Senate Committee on Health, Institutions, and Welfare presided. This legislation specified the following:

- Covering all payers in the rate regulation system for inpatient care and developing some mechanism for covering outpatient rates
- Including the costs of caring for the indigent in the rate base
- Creating a five-member Hospital Rate-Setting Commission within the Department of Health, with three members of the public appointed by the Governor, along with the Commissioners of Health and Insurance
- Considering case mix in setting rates, but assigning the Commissioner of Health responsibility for developing regulations. (The approval of the Health Care Administration Board was still required, but the Board was changed so that the majority of its members were consumers of health care.)
- Developing a time-phased system both for reaching true prospective budgets and for bringing hospitals onto the system according to their abilities to reach the required sophistication in data recording and reporting. (This part of the legislation recognized that hospitals differed in both their readiness and their efficiency. When SHARE began, some hospitals in New Jersey had their own main-frame computer systems, professionally trained financial managers and chief executive officers, while others had never prepared budgets. The department believed that overnight system change could be disruptive to unprepared institutions.) (80)

The process to pass the law was not without controversy:

> Blue Cross officials, seeing that extended coverage was inevitable, fought to retain some of their preferential status.... Blue Cross insisted it had to have a companion bill tied to S. 446.... The amendments to the state insurance code, sponsored as S. 419, proposed a guaranteed Blue Cross contingent surplus averaging five percent of the net premium income it received during the year. [This was eventually lowered to two and a half percent on the Senate floor.]
>
> The schism which had developed in the Hospital Association over the question of indigent care costs did not allow NJHA to present a strong and united opposition to the measure as it had in the past. Blue Cross officials, seeing the internal strife at NJHA and realizing that they had opposed a considerable amount of regulation during the year, held back on their opposition to S. 446 (80).

Yet the committee hearings, perhaps for the first time, took into account all the interests in the hospital care financing system and served to educate both the public and the legislators on the bases for many of the hospital industry's and payer's problems.

The most wholehearted proponents of the legislation were the following:

- Administrators of inner city hospitals, particularly of those sponsored by religious orders
- Labor unions with self-insured health and welfare benefit systems (including the Hospital Workers' Union)
- Representatives of the elderly
- Commercial insurance companies with large shares in the health insurance market
- Organizations advocating the interests of the working poor and Medicaid populations.

The Federal Contract for Implementation

On January 1, 1979, the Commissioner of Health forwarded a new technical proposal to the Health Care Financing Administration (HCFA). The proposal had been the subject of negotiation and revision for several months. One of the conditions for its success had been the passage of the amendments to New Jersey's laws. The transmittal letter stated:

> As you are undoubtedly aware, we have substantially completed the tasks under SSA [the Social Security Administration] development contract 600-77-0022, and have completed activities in excess of the contract requirements. Our success in achieving the goals of that contract has put us in a position to fully implement the original concepts: the payment of hospital budgets by the patient case; the coordination of operating cost containment with health care

> planning; and the relationship of the planning and case-mix payment with quality controls.... The system is being designed so that it will be transferable to other states and available for use by the Federal Government (16).

While the document outlined numerous tasks required to refine the data base, its main proposal was to bring all hospitals in New Jersey, in a carefully selected order, onto a DRG-based payment system. The new New Jersey statute required that this be accomplished between January 1, 1980, and January 1983. The Federal contract was to hold through the end of 1983. The agreement between the State and Federal governments read:

> The hospital budgets for each DRG and institutional costs are then contrasted with the respective standards representative of all acute care hospitals in New Jersey. Appropriate performance adjustments to the budget are made in order to establish a fully prospective Preliminary Cost Base for each hospital, thereby allowing incentives for efficiently operated and utilized institutions and allowing identification and time phasing of excess costs in other institutions (36).

A computer model was developed to obtain a representative sample of hospitals regarding size, location, and teaching characteristics to determine the order in which hospitals would be mandated to join the system. (Chapter 83 had directed the commissioner to determine this order.) For the first year, attention had to be given to some institutions' pleas that they needed additional revenue for care of the medically indigent. But the selection of hospitals also had to prevent unreasonable demands on the payers involved. Consideration had to be given, as well, to the hospitals' differing abilities to submit good data. Thus, volunteers were sought, and 10 (of the 26) came forward from the group of hospitals who had participated in the experimental phase.

The following numbers and types[*] of hospitals participated in the first year that rates were set by DRGs:

- Four urban hospitals that had major teaching programs (three of the hospitals having deficit problems believed attributable to unreimbursed indigent care, a financial element not covered in the SHARE system or by Blue Cross and Medicaid)
- Three suburban hospitals that had major teaching programs

---

[*] Regarding New Jersey's grouping of hospitals based on urban/suburban/rural designations and on teaching status, see the section "Costs of Medical Education." New Jersey's criteria for grouping hospitals may not serve well for all areas of the nation. For example, in New Jersey there is no rural area isolated from urban centers by distance or transportation nor one in which agriculture is the sole industry; and one of New Jersey's "urban" hospitals is in a middle-sized city, which functions as the county seat of the most affluent part of the State.

- Two urban hospitals that had minor teaching programs (both of the hospitals having deficits from unreimbursed indigent care)
- Two suburban hospitals that had minor teaching programs
- One rural hospital that had a minor teaching program
- Four urban nonteaching hospitals (two with deficits owing to indigent care)
- Seven suburban nonteaching community hospitals
- Three rural nonteaching community hospitals (both with deficits owing to indigent care).

The Federal Waiver of Medicare Principles of Reimbursement and the "Cap"

The signing of the amended Federal contract ensured that a prospective hospital reimbursement system based on case mix (DRGs) would be implemented in New Jersey. However, implementing the system in practice depended on using the new reimbursement principles and methods for all payers. Further, the contract had legal implications: the State law made it explicit that "payment by all other purchasers of health care services provided by a hospital shall be at reasonable rates approved by the commission as provided in this act. All payment rates shall be equitable for each payer or class of payers without discrimination or individual preference except for quantifiable economic benefits rendered to the institution or to the health care delivery system taken as a whole" (NJSA: Chapter 83, Public Law 1978).

Although the amended contract had been substantially agreed to by June 1978, it was not known until October that the Federal Government would grant a waiver of Medicare principles of reimbursement only if its liability were limited by a "cap." In part, this delay was due to the procedures of HCFA. The New Jersey regulations to implement the system had to be scrutinized and approved by HCFA before the State could promulgate them, and even before it could apply for a waiver (71).

The "cap" negotiated was as follows:

> The B Cap is designed to project what Medicare's Part A reimbursement would have been without the experiment for each New Jersey Hospital. This requires taking a base year Medicare cost finding and adjusting this base for 1) inflation, 2) certificate-of-need approved new programs and new programs [e.g. JCAH (Joint Commission on Accreditation of Hospitals) or legal requirements such as tumor registry] not requiring certificate-of-need approval, and 3) changes in Medicare case mix over the duration of the experiment and determining how these changes would impact reimbursement under Title XVIII Principles [exclusive of lower costs or charges and per diem routine service limitations] (59).

The inflation adjustment proposed was the economic factor developed by New Jersey. Other methods were spelled out in the State's proposal for adjusting the cap to account for the different dates when a hospital prepared its

Medicare cost findings and the time it entered the State's system, as were the methods for adjusting the State's cost-finding and reimbursement worksheets and calculating a Medicare case-mix index (59).

A State's negotiations over a cap are extensive. They involve policymakers at both State and Federal levels. The first step was to obtain Federal agreement that the time of the project would run 57 months rather than the 45 months originally intended. This change was consistent with the Chapter 83 timetable, and, since Federal evaluation of the cap status would not occur until this period was over, every hospital in New Jersey would operate for at least one year under the system. Thus, there would be time to observe the system's effects.

The next step was to obtain the approval of New Jersey's Governor. There were obvious implications for future State budgets and the State's share of Medicaid, such as the provisions to pay back the Federal Government should the cap be broken. The payback provision ultimately read:

> The determination of whether there is to be a recovery will be made at the end of the demonstration period. Calculation of a contingent liability of individual hospitals will be made on a yearly basis by multiplying the percent of total Medicare and Medicaid dollars paid to all demonstration hospitals received by the individual hospital by the excess payment calculated by the CAP. At the end of the demonstration years, the yearly contingent liabilities of individual hospitals will be summed and represented as a percentage of the total contingent liabilities of all hospitals. This percentage then will be applied to the net overpayment for the demonstration to determine each hospital's liability under this recovery provision. It is recognized that, after the completion of the demonstration period under this contract, the State of New Jersey may determine under its regulatory authority that such recovery may be deemed an additional financial element for appropriate hospitals to be recovered over a period of time through rates established for payers under its jurisdiction (68).

The decisionmakers were aware that New Jersey acute-care hospitals, future legislatures, and payers who still remained covered if laws were not changed were all placed at risk along with the State's Treasury, as long as 50 percent of Medicaid reimbursement remained an obligation of New Jersey. The commissioner calculated for the Governor the potential liability, predicting conservatively that New Jersey could keep its hospitals' average rate of cost increases at least 3 percent under the national average (18). The Governor approved the cap.

Finally, the waiver was granted with the Medicare cap as follows(25):

> CAP B to include a multiplier to increase the economic factor by 2 percent per year

with the following modification in the financial elements:

> The definition of research costs to be included in the financial elements within this system shall remain identical to the Medicare definition of allowable research costs.

The department was now ready and legally required by both Chapter 83 and its Federal contract to begin issuing rates to the first 26 hospitals in January 1979 for their budgets beginning January 1, 1980.

Getting Ready: Refinements

Rate Design and Incentives

From the beginning of the SHARE system, the department had worked to solve "the fundamental problem in cost containment -- defining the appropriate tools for measuring reasonable efficiency" (39). Under SHARE, the Department attempted to encourage more efficient hospital management by introducing into the rate a 1-percent productivity margin. But the hearer's report on the reasonableness of the economic factor (see ch.3) addressed this method, concluding:

> ... the one percent productivity factor inserted in a hospital's rate is arbitrary, since it unfairly discriminates against a hospital already efficient and can only bear upon those that are inefficiently administered. The productivity factor should be variable (22a).

To develop equitable payment rates that would allow comparing hospital costs, standard rates had to be calculated for each DRG. Many trial standards were computed, and for the Blue Cross Experiment the arithmetic mean of the cost per case (its average) was selected. Separate standards were set for teaching and nonteaching hospitals. (Later this classification was further refined to distinguish major teaching hospitals, minor teaching hospitals, and nonteaching hospitals.) In order to ensure accurate cost comparisons it was necessary to eliminate the effects of differing labor market compensation patterns from the standards. This was accomplished by applying a labor adjustment or "equalization factor" to the hospital's costs and calculating the means using the labor adjusted costs. For purposes of determining a hospital's payment, costs were converted back to reflect the hospital's wage dollars. This was done by applying the reciprocal of the equalization factor or the "unequalization factor" to the standards. (This process is similar to the labor adjustment used in the current HCFA methodology for Medicare.)

It was then recognized that using the mean cost per DRG might legitimize embedded inefficiency, so the median cost per DRG was calculated.

Eventually a compromise was reached:

> Calculation of Standards - The calculation of standards will be based on the group of hospitals first receiving a preliminary cost base (PCB), or other appropriate sample of hospitals thereafter. The cost per case of each hospital's patients with UB-PS [Uniform Bill-Patient Summary] or combined abstract/bill records categorized by inpatient DRG are multiplied by each hospital's equalization

> factor. The mean equalized cost in teaching or nonteaching hospitals, respectively, is the incentive standard for each DRG. Other standards to be calculated shall be, but are not limited to, the Efficiency Standard [median] or lowest cost per case in a hospital which has treated more than ten patients [in a DRG] (37).

Next came the work to decide how to develop incentives and disincentives for positive and negative variances from these standards (standards that thus attempted to define "reasonable costs"). The reasonable direct cost per case [DRG] of the Preliminary Cost Base for those hospitals ... receiving rates in accordance with these regulations are determined for teaching and nonteaching hospitals, for every DRG with greater than five merged patients and shall include incentives and disincentives, ... which shall be termed the boundaries of payment..." (37).

The system for calculating standards and variances (negative and positive) from the payment rates is the most complex part of the New Jersey system. It may not be necessary to replicate these calculations nationally, although the software to do so has been developed. New Jersey considered several points in calculating hospital-specific, DRG-specific incentives and disincentives. Perhaps foremost were the admonition in the hearer's report and the legislature's awareness that hospitals operated with different degrees of efficiency, and that some therefore needed additional time to achieve their best performance under such a system.

The department staff also recognized from the initial experiment that DRGs needed refinement. While the State proposed to perfect DRGs as experience was gained, it had some reason to be uneasy about "returning to the institution, by DRG, 100 percent of the difference for performance below the standard, and 70 percent of any overspending... [This would be] merely to reward the degree of divergence from the standard; the wider the swings, the more the reward" (24). This reimbursement arrangement would be particularly troubling if a DRG were unreliable:

> Although DRGs are designed to permit the classification of patients into groups with homogeneous patterns of resource use, in reality, this consistency varies considerably among DRGs. Some DRGs are more statistically stable than others, because of such factors as varying levels of efficiency, differences in medical practice, and the reliability of clinical data used to create DRGs. This varying statistical stability had important implications for rate-setting; for example, the cost per case for [old] DRG 318 -- Normal Mature Newborn -- did not vary nearly as much as the cost per case for [old] DRG 121 -- Acute Myocardial Infarction.
>
> DRGs are defined so that they reflect the underlying patterns of medical care throughout the State. If a DRG is truly accurate then it can be applied to any hospital and the patient care related costs incurred by each hospital should be comparable; the mean should approximate the 'true' cost of each DRG in New Jersey. But, due to data reliability factors and certain variations in medical practice, some of the DRGs are not as well defined as others. This means that a hospital's cost for DRG may differ from the standard for reasons that do not reflect hospital performance (45).

Thus, New Jersey established the use of a coefficient of variation for setting DRG-specific rates that could differ among hospitals and could help provide appropriate incentives and disincentives.

> The decision was to 'blend' the rate so that no more of the DRG standard rate [as opposed to any given hospital's mean DRG cost] would have been injected into a hospital's DRG payment rate than could be justified by the stability of the DRG itself. In order to measure the stability of any given DRG, the coefficient of variation was calculated by dividing the standard deviation of patient care costs per case by the mean patient care costs per case.... Hence, the larger the coefficient of variation, the greater the variability, and the lower the degree of confidence; the smaller the coefficient of variation, the lower the variability, and the greater the degree of confidence that the DRG represents a truly uniform group of patients [fig. 4-1]....
>
> The base payment rate for each DRG in each hospital [excluding outliers] was set by combining a percentage of the hospital's [base year] actual costs per case with a percentage of the unequalized standard cost per case" (45).

If the variance from the standard was great, hospitals would receive a greater percentage of their own costs in the payment rate and a smaller percentage of the standard. The proportion suggested initially for setting DRG rates (rates for the variable direct patient care portion) was 25 percent standard, 75 percent actual hospital costs. In actual experience these more closely approximated 40 percent standard, 60 percent actual hospital costs.*

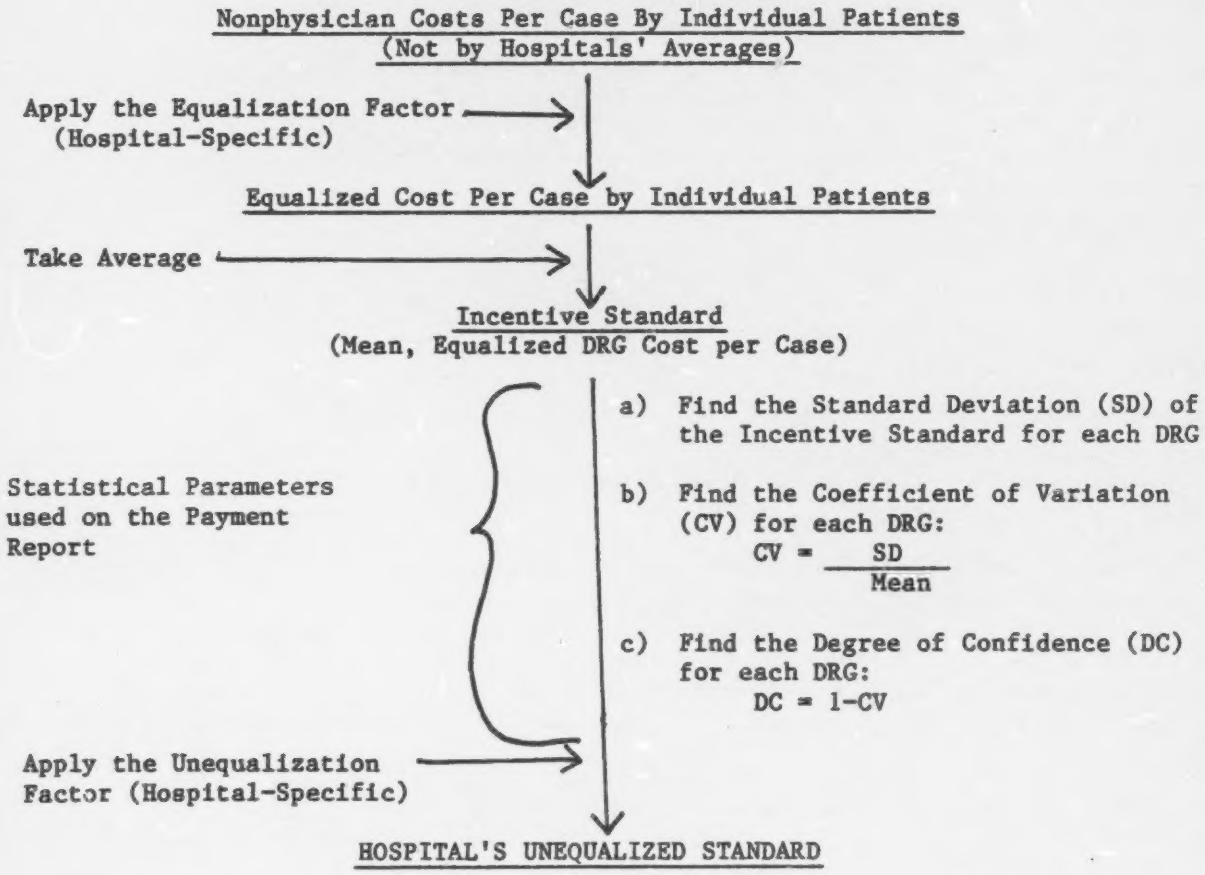
> But this would be shifted over time to emphasize the standard, as less efficient hospitals were supplied with management information and acted to cure ... deficiencies and to bring their expenditures into conformity with reasonable costs. However, the proportions would always sum to one in order to protect both the public and the hospitals by assuring that total expenditures stayed constant over a given rate period. Finally, it was suggested [again] that the standard be raised to the mean to emphasize the incentive nature of the system and to encourage industry responsibility and initiative. It was felt that by providing a strong payment incentive and by linking it directly to operational efficiency, the focus of a considerable amount of industry energy and expense currently devoted to reimbursement maximization might be ... harnessed toward developing institutional efficiency and

---

* The percent of standard used in setting 1980 rates was 50 percent of 1 coefficient of variation (cv) and the percentage of the hospital's actual costs built into the DRG rate was 1-0.5 [(1-cv)]. In 1981, with more hospitals in the system, the process known in the department as "racheting down" was begun. The portion of standard calculated into the rate was 100 percent of 1-cv, or 1-cv. The portion of the rate determined by the hospital's actual cost was equal to the coefficient of variation.

Figure 4-1

Cost Per Case Standard Calculation Summary


Nonphysician Costs Per Case By Individual Patients
(Not by Hospitals' Averages)
Apply the Equalization Factor
(Hospital-Specific)
Equalized Cost Per Case by Individual Patients
Take Average
Incentive Standard
(Mean, Equalized DRG Cost per Case)
Statistical Parameters used on the Payment Report
a) Find the Standard Deviation (SD) of the Incentive Standard for each DRG
b) Find the Coefficient of Variation (CV) for each DRG:
$CV = \frac{SD}{Mean}$
c) Find the Degree of Confidence (DC) for each DRG:
$DC = 1-CV$
Apply the Unequalization Factor (Hospital-Specific)
HOSPITAL'S UNEQUALIZED STANDARD

Adapted from: Surpin, J. and Pope, N., "Diagnosis Related Group Rate-Setting Guide," Alpha Health Consultants, Inc., 1982.

effectiveness...(24).

Finally, annual management reports for New Jersey hospitals were generated DRG by DRG and cost center by cost center so that hospitals' degrees of variance from statewide standards could be compared (attachments L and M). Hospitals, in turn, developed their own data processing capabilities so that from the management reports they could identify, by attending physician, each case in a DRG group that negatively varied (an economic disincentive). Disincentives are powerful instigators of change, because the hospital simply loses money, and therefore would want to make appropriate corrections. Incentives earned allow innovation, and practices that permit this should be encouraged. But the first intended goal of such rewards and penalties is to enable cost containment. Institutions can pinpoint why efficiencies and other difficulties occur. In New Jersey, the cost containment that has already been demonstrated may arise as much from the specificity of the information that hospitals now get through their management reports (and consequent changes in organizational behavior), as it does from the imposition of payment boundaries.

New Financial Elements

Chapter 83 mandated that certain financial elements be included in hospitals' revenue budgets, elements that had not previously been allowable costs in various provider contracts. Certain other financial elements were to be calculated differently as well. Preliminary work had been accomplished by the commissioner's Task Force on Financial Elements and their recommendations were used as a starting point (see ch. 3). The task force was changed to include representatives of the department, hospitals, and payers, and representatives of the SSA. Together they drafted the detailed definitions for the later Procedural and Methodological Regulations (37) that were required to implement all aspects of Chapter 83. (They were adopted in October 1978 by the Health Care Administration Board.)

Outpatient Costs. Outpatient costs were not included in the Blue Cross experiment, but had to be covered under the mandates of Chapter 83. No case-mix classification is now available to determine case-specific rates for outpatients.* As an interim measure, outpatient costs were classified into seven categories: Ambulatory Surgery, Same-Day Psychiatry, Outpatient Dialysis, Private Referred Patients, Emergency Room, Clinics, and Home Health Care. The costs of Private Referred Patients are not accounted for in the cost base. With this exception, the unit cost is calculated as the total base-year audited costs in each category divided by the number of patient visits in that category for the base year. No standards are applied in this calculation. Hospitals are paid based on their actual experience. However, to provide a greater incentive for a hospital's utilization of outpatient rather than inpatient care, a special method for calculating an incentive amount for same-day surgery has been approved by the commission. A calculation (a so-called "cost/volume adjustment") is being developed so that hospitals will not be penalized when their volume decreases beyond a certain percent because of their greater use of ambulatory facilities.

---

* A research group at Yale University is developing Ambulatory Patient Groups (APGs).

Uncompensated Care. Each hospital's base-year percentage of bad debts (for which collection efforts are documented) and "charity care" in the total gross revenue for patient care is figured along with the other financial elements and added to the total base.

Working Capital. Consideration of working capital is based on the theory that current cash flow must be sufficient to prevent the high-interest borrowing that inflates costs. Thus, all hospital costs are increased by 5 percent in the rate determination, but are not allocated to prompt payers (defined as "payers making periodic intermittent payments to hospitals at volume projections by the hospital reconciled periodically ... or by other means such as teleprocessing which will approximate payment for services to the payers' patients at the time the hospital must pay employees and vendors ..., or the patient or other responsible party making payment on or before discharge) (37).

Initial Infusion of Working Capital (WCI). This is an add-on payment to some hospitals to reduce their deficits and borrowing needs. This payment is mandatory for any institution that in its base year had uncompensated care equal to or greater than the median of all hospitals. It is also determined by examining a hospital's opening balance of unrestricted cash and investments, accounts receivable, and trade accounts payable. Reasonable operating cash, excess accounts payable, and principle on outstanding working capital loans are compared with unrestricted cash on hand and excess accounts receivable.*

Costs of Medical Education

No satisfactory method has yet been found to calculate the "allowable" costs of medical education in hospitals. In New Jersey, the hospitals are grouped as major and minor teaching hospitals, are as nonteaching. Each has its own set of standards for the costs of direct patient care. Both are conferred higher rates than nonteaching hospitals. The 1982 amendments to Procedural and Methodological Regulations (38), also assumed that major teaching hospitals would have higher costs; therefore, another markup for these hospitals will be considered after further studies.

A major teaching hospital affiliated with the State's medical school, which joined the DRG system in 1982, appealed its PCB before the Hospital Rate-Setting Commission. It desired additional amounts to support faculty and clinical services for faculty. The commission has established a task force to consider the related issues:

---

* While this form of a "distress grant" will probably not be used in any national system, it is interesting to note that in the one instance where a calculated working cash infusion was a very large sum, regulation allowed only a portion of it to be added to the base each year. In the meantime, the hospital was ordered to completely reorganize, then report its progress to the commission.

- Measures of teaching intensity by DRG, specialty, and resident physician postgraduate year (PGY).
- Measures of other activities taking the time of residents and supervising physicians, focusing on whether such activities can be related to DRGs and to the direct costs of patient care.
- Policy on State-supported medical education regarding the degree to which third-party payers should be responsible for the inhospital costs of medical education, and to what degree this education should be supported by the tax structure of the State.

Thus the Hospital Rate-Setting Commission in New Jersey is faced with a policy issue similar to that confronting the nation.

Calculations of Return on Investment -- For-Profit Hospitals

Calculations of return on equity/investment for invester-owned hospitals were to be carried out according to the Medicare Principles of Reimbursement at 100 percent for the rate year beginning January 1981, at 50 percent by January 1982, and then eliminated. This was a subject of controversy for the one proprietary hospital in New Jersey. Special legislation that was passed to amend Chapter 83 exempting this hospital from the DRG system was subsequently vetoed by the Governor. HCFA consistently rejected any effort to have the regulations changed to reflect some factor. The incentive structure used by New Jersey was viewed as sufficient to allow efficient hospitals to generate profits if their costs were less than the DRG standard rate. From profits thus generated, the proprietary hospitals' managers could determine the returns to the investors.

Capital Facilities

Buildings and Fixed Equipment.

Chapter 83 specified two financial elements to be included in calculating hospitals' revenue needs -- "principal and interest payments" and "preservation, replacement and improvement of facility and equipment subject to appropriate planning requirements" (37). This inclusion was another result of legislative compromise.

Financial elements for capital facilities (building and fixed equipment) are included in the PCB in two ways. Current debt service obligations are defined as Capital Cash Requirements, i.e. "... all current payments, excluding cash purchases, made for Capital Facilities utilized for Services Related to Patient Care during a reporting period, including lease, principle, interest on long-term debt, and certain other debt service payments, but excluding the expenditure of specific purpose grants for capital projects" (37). Balloon payments in the year they became due are excluded. They must be reported to the commission so that possible refinancing can be examined.

Certainly, no controversy has arisen over this treatment of capital cash requirements in a prospective budget. In addressing renovation and replacement, however, the New Jersey system departed substantially from the Medicare Principles of Reimbursement, which recognize depreciation of the hospital plant as reimburseable.

> In theory, depreciation costs should provide for the eventual replacement of an asset, but neither Medicare nor other third party payers required hospitals to fund depreciation, and many expended all or part of depreciation income on current expenses. So long as 100 percent financing [is] possible, and interest is also reimburseable, hospitals had no need to fund depreciation. The impact of such behavior on consumers over time is, however, extremely costly (72).

The department therefore decided not to recognize depreciation, but to make a different provision for replacement funds. This became the Capital Facilities Formula Allowance (CFFA), and its funding is mandatory. The goal is to provide a fund which, at the end of a facility's useful life, will contain enough for a 20-percent down payment for replacement. Counted into hospitals' reimbursements, then are sufficient funds so that down payment can be amassed in relatively equal amounts and adjusted for inflation.

New Jersey has attempted to carry this method a step further than have other systems on the theory that "... it makes no sense to replace facilities that are truly not needed; doing so imposes a significant cost on current rate payers and will create problems in the future for the certificate-of-need process, which may be confronted with applicants that appear financially viable when planning agencies may be politically reluctant to force institutions to close" (72).

The department attempted to interpret the intent of the statute's qualification "subject to appropriate planning requirements." Therefore, the methods proposed for calculating the CFFA addressed the difficult question of which hospitals should be replaced and how large the replacements should be.

The 1980 proposed regulations defined replacement as the probable construction cost of new hospital beds times "target beds." Hositals' target beds would be those already approved in the local Health System Agency (HSA) plans, as approved by the State Health Plan and Development Agency (SHPDA), and consistent with the overall State Health Plan. The plan had listed the reduction of excess capacity for acute inpatients as a major priority. This proposal was vigorously opposed by the New Jersey Hospital Association. For hospitals entering the system in 1980, the first year rates were set by DRGs, it was finally agreed that target beds would be defined as 1978 licensed beds.

The proposed 1981 regulations defined target beds by optimal occupancy standards which had been adopted by the Health Care Administration Board as part of the standards for certificate-of-need. Optimal occupancy was set as 90 percent of medical and surgical beds, and 75 percent of pediatric and obstetric beds. The number of target beds is then multiplied by an estimated current construction cost per bed, determined by formula, adjusted for hospital location, and updated annually.*

---

*See next page for footnote.

As national commitment to planning laws weakens, however, these unresolved capital reimbursement issues in the New Jersey system point out clearly that, whatever the methods for calculating the price of care and the way it will be paid for, capital costs must undeniably be considered. It is unlikely that philanthropic actions will ever be "equitable" nor will the country return to raising funds to build hospitals as it did before Medicare. Reimbursement systems have to face these issues as they are currently posed. Thus, it is questionable whether methods for calculating "reasonable rates" alone can contain the escalating costs of health care without the accompaniment of strong planning requirements and the means to enforce planning decisions by withholding reimbursement.

Major Moveable Equipment. The rate per case is built from both patient-related variable costs and fixed institutional costs. Controversies that arose in New Jersey about how the financial factors are calculated may be instructive for any national use of a similar system.

The provision for building a PCB that includes the reasonable costs of replacing "[major moveable] equipment, subject to appropriate planning requirements" was a relatively small detail of the system, but one of controversy. Medicare, Medicaid, and New Jersey Blue Cross previously used the straight-line depreciation method (dividing the purchase cost of the asset, less an estimated salvage value, by the number of years of its useful life) to build an annual amount into the reimbursement rate. But the simplified system of straight-line depreciation does not account for inflation, and thus, even with prudent investment, accumulated funds may not suffice to replace equipment. For this reason, New Jersey also developed a price-level depreciation allowance. Depreciation expenses calculated by accepted conventions were converted to an allowance approximately equal to the value of equipment purchased in the current year. Replacement costs were thus

---

*One proposed formula was thus:

For Pediatric and Obstetric Services (for facilities with 1,000 or more deliveries), target beds equal:

(1.33) x (most recent actual year licensed beds) x (most recent actual year occupancy rate)

For facilities with less than 1,000 deliveries no target beds will be included unless the criteria is waived by the New Jersey State Department of Health due to accessibility issues. However, in no case will waivers be considered for facilities with less than 500 deliveries (37).

This calculation stands in the current methodological regulations. But the formula for calculating medical and surgical beds ([licensed beds] x [average occupancy] x [1.1]) had to be compromised again, and now reads (37):

For all other services, target beds equal:

(1.175) x (most recent actual year licensed beds) x (most recent actual year occupancy rate) estimated at more than the historical purchase price of the equipment. Price-level factors were determined annually using various indexing handbooks for hospital equipment.

Interest associated with capitalized financing of purchases or leases was not reimbursed. (A hospital could appeal the cost of interest for equipment financing under certain conditions.) The "Internally Generated Major Moveable Equipment Replacement Fund" was established to provide funds to replace purchased equipment and eliminate the need to borrow, finance, or meet installment payments.

Despite this liberal departure from the Medicare Principles of Reimbursement -- making price-level depreciation an allowable cost -- hospitals have contended that the arrangement is not adequate in two ways:

1. Regarding items that have been fully depreciated: Only equipment that has not been fully depreciated at the start of the fiscal year is used in calculating the allowance. Under the previous system, hospitals may not have funded the depreciation or made related investments. Thus, some hospitals contended they entered the system with a deficit. Such deficits may have resulted from many factors, including the hospitals' failure to reserve the funds or invest them prudently, or from previous challenges under the SHARE system to certain depreciation expenses.

The department believed this raised the issue of whether current payers should be responsible for past management errors or past failures to establish reserves to replace equipment.

2. Regarding advances in technology: A piece of major moveable equipment will not always be replaced by something similar. A conflict does arise when replacement equipment represents a significant technical advance and thus a more significant part of the value of the facility's major moveable equipment (73).

However, the DRG appeals mechanism that the regulations provide encompasses the issue of quality improvement and technological advances. In fact, the main purpose of the commission (other than to hold hearings on the PCB for hospitals wishing to appeal it) is to hear DRG appeals on just such issues as new technology. The amount a hospital wants to be appeal for new technology must be specified in its certificate-of-need application.

The comparison of hospitals by standards, and the provision for DRG appeals provide the data and the forum to determine the reasonableness of the costs of major moveable equipment. The regulations thus have not been changed, despite the hospitals' strong urging that they should be.

> The purpose [of the standard] is to make an equitable comparison of each hospital with its peers. Thus, a hospital's total cost for an appendectomy [including amounts for price-level depreciation] is compared to the standard. The payment rate will include a portion of the standard, thus providing the hospital with either an incentive or a disincentive.... The crucial element is the hospital's performance relative to the standard. The purpose of the DRG system is to equitably compare hospitals and provide information

> which can be used to achieve effective allocation of resources. This means that hospitals may trade off increases in equipment against decreases in other expenses without requiring increases in their payment rates, if the equipment is cost effective. If the new equipment is therapeutically superior, ... [and] render[s] an improvement in quality of care, then [through DRG appeals, this] can be reviewed to determine the appropriate adjustment in the rates. Potential areas of inefficiency are examined to offset the cost of the equipment.... If the equipment will cause volume increases, additional revenues to cover the cost of the equipment will be realized from the increased patient loads.
>
> The issue is productivity and how well the hospital manages all of its resources ... in order to treat its patients in a particular DRG at a reasonable price.... Hospitals [now] have a significant incentive to purchase cost-effective equipment, but are penalized if they purchase equipment that is neither therapeutically superior nor efficient (73).

Table 4-1 summarizes the differences in provisions in New Jersey's DRG-based reimbursement system and those employed by Medicare through Federal fiscal year 1983. The differences are spelled out both for cost finding methods and for financial elements included in the calculation of payment rates.

Appeals

All regulatory systems must provide for appeal. But systems to regulate health care financing also have an obligation to the public, the payer, and the provider to minimize protracted appeals that may interfere with efficiently rendering health care. The success of a rate system might generally be judged by the effectiveness of the balance established between rules applied automatically and equitably to all, and exceptions. If the rules have properly taken into account the financial issues faced by the regulated industry, considerable effort and expense should not be required in the appeals process. On the other hand, the appeals process that does remain should be designed to help make new policy intelligently.

The design of New Jersey's prospective reimbursement system began with research to identify the important financial issues, and resulted in a method that could deal with phenomenon like inflation, labor market differentials, the impact of teaching status, and future capital needs. Thus, not much regulation had to be handled by exception.

The Procedural and Methodological Regulations (Sections 8:31B-3.51-3.66) (37) specify the orderly procedures that hospitals, the department, and the newly established Hospital Rate-Setting Commission should follow. Hospitals are offered a schedule of rates in a form that includes items that are appealable, largely because of having changed in value over the base year. These include changes in teaching status or physician compensation, costs related to recently approved certificates-of-need, and revenue adjustments for same-day surgery. A hospital not accepting its proposed Schedule of Rates is placed at a certain risk, however, since its entire PCB becomes subject to review. Nevertheless, this option is offered.

Table 4-1
New Jersey Principles of Reimbursement Compared to those of Medicare
1976-1982

COST FINDING

NEW JERSEY DRG SYSTEM	MEDICARE
Nursing Patient days (until RIMS are used), including for intensive care unit and other specialty services.	Per diem unit cost adjusted by nursing differential for general acute care only
Ancillary Services Charges by DRG (Ratio by cost to charges by patient)	Ratio of cost to charges by cost center
General Services Same statistics as Medicare	
Institutional Fixed Costs Unlike Medicare, New Jersey screened all cost centers--administrative, fiscal services, etc.--except those for malpractice, depreciation, and utilities, which were passed through. New Jersey also screened utilities after Chapter 83 was enacted, partly to discern where certificates-of-need for energy conservation might be necessary.	Uses Medicare Cost Reports to allocate either to routine or ancillary cost centers.

Financial Elements
(after Chapter 83)

Total direct patient care, inpatient and outpatient	Nursing costs used as a proxy for direct patient care; and allowable cost limits for outpatients.
Price-level depreciation on major moveable equipment	Historical depreciation.
Capital facilities allowance	Depreciation and interest.
Working Capital (prompt payment discount)	Interest on working capital.
Working-cash infusion (WCI)	None.
"Charity care" and bad debts	Medicare calculations for its share of bad debts when beneficiaries have not paid their deductible.
Income from other sources as "offset"	Same.

That the process worked even in its first year may be indicated by the facts that schedules of rates for the first 26 hospitals were ready by January 11, 1980; hospitals began billing under the new system on May 1, 1980; and by December 1980, all appeals had been heard and resolved by the new commission.

There are changes in health care for which general rules cannot account: advances in technology, quality of care, and certain other innovations. These are provided for in New Jersey by a method of exception to which only a patient-based data system could readily lend the necessary information: the DRG (clinical) appeal. This process is designed to handle regulatory business as efficiently as possible. It is made clear in the regulations that DRG appeals must be generic and that the issues appealed are likely to transcend the institution appealing. Once an exception is made, it can be applied fairly to all similarly situated institutions.

The provision for the DRG appeal therefore reads:

> Any issue concerning differences in an institutional course of action or in patterns of medical practice, affecting a given Diagnosis Related Group or group of Diagnosis Related Groups, which is likely to significantly affect one or more institutions, shall be considered a DRG appeal.... Application to be so considered may be made by any party including the Commission on its own motion (37).

If the system functions as intended, the annual automatic adjustments made by general rule to hospitals' prospective budgets will inform both payers and institutions as to the revenues expected. Only DRG appeals should be necessary. These appeals enable public policy discussion to determine what the public is willing to pay for innovations alleged to advance the quality of hospital care.

Getting From Here to There: Constructing the Preliminary Cost Base and the Schedule of Rates

The system that served to issue rates for the first 26 hospitals is not the system in its final form. All acute-care hospitals in the State were brought onto the system by January 1983. New DRGs (a total of 467) are in use and the hospitals initially paid based on the 383 DRGs were reanalyzed using the new "DRG list." Even the PCB was entered into New Jersey law to help hospitals make the eventual transition to a Certified Revenue Base, the final prospective budget. Except for considering changes of quality and technology, the Certified Revenue Base should only require automatic adjustments each year such as those made for inflation.

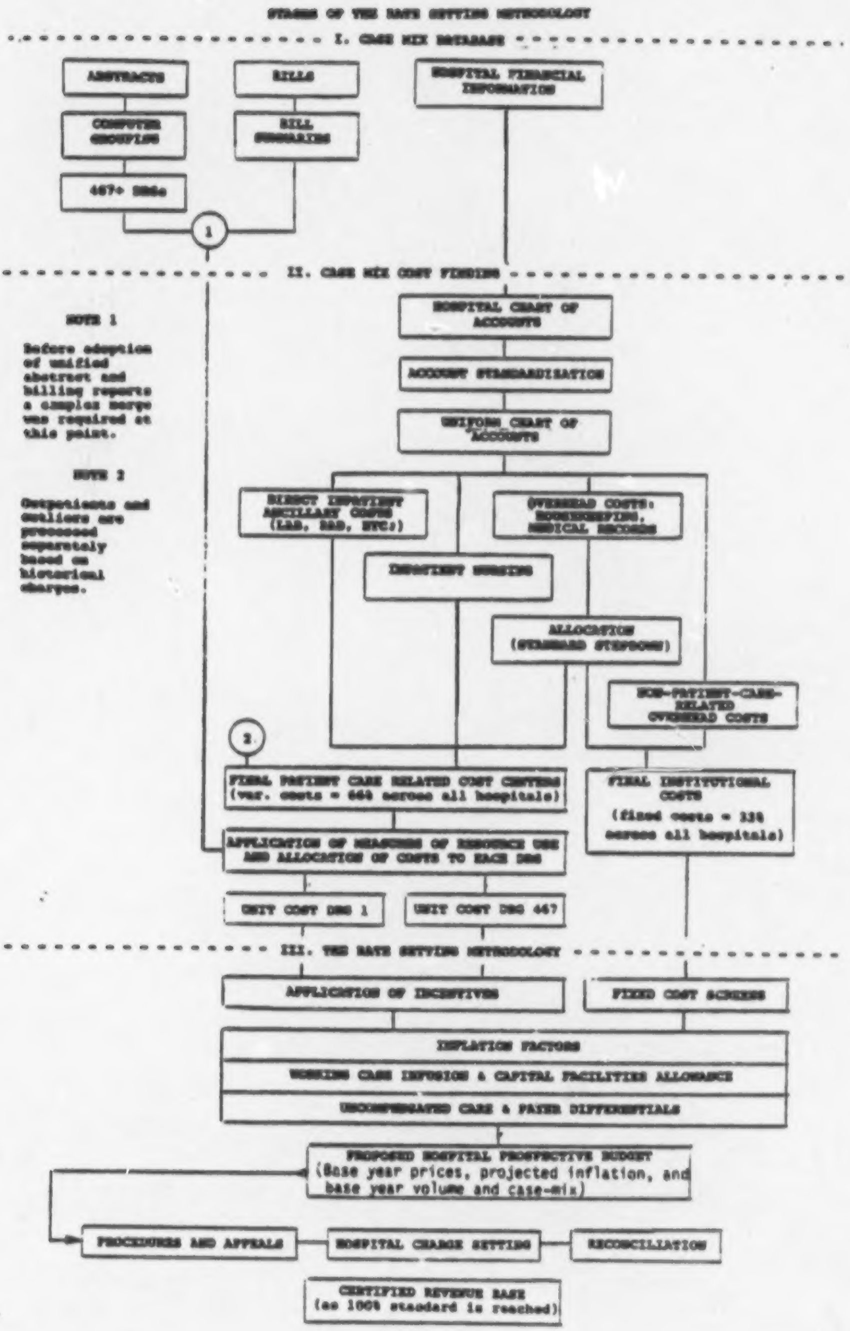
The law reads:

> The preliminary cost base initially may include costs identified by the Commission as being in excess of that proportion of a hospital's current costs identified above, which excess costs shall be eliminated in a timely and reasonable manner prior to certification of the revenue base.... 'Certified revenue base' means the preliminary cost base adjusted by the Commission ... to provide for the financial solvency of the hospital which is properly utilized

and which delivers, effectively and efficiently, appropriate and necessary health care services of high quality required by its mix of patients (NJSA, Chapter 83, of Public Law 1978).

Figure 4-2 shows the computer modules used to build the PCB and the Schedule of Rates. Attachments F, G, H, I, taken from the Procedural and Methodological Regulations (37), represent samples of some of the worksheets prepared by both hospitals and department analysts from which the PCB and the final Schedule of Rates (Attachment I) are constructed and presented to the Hospital Rate-Setting Commission. Attachment J illustrates one page from one hospital's Schedule of Rates as it was actually granted by the Hospital Rate-Setting Commission.

Figure 4-2


STAGES OF THE RATE SETTING METHODOLOGY
I. CASE MIX DATABASE
ABSTRACTS
BILLS
HOSPITAL FINANCIAL INFORMATION
COMPUTER GROUPING
BILL SUMMARIES
467+ DRGs
1
II. CASE MIX COST FINDING
HOSPITAL CHART OF ACCOUNTS
ACCOUNT STANDARDIZATION
UNIFORM CHART OF ACCOUNTS
DIRECT INPATIENT ANCILLARY COSTS (LAB, RAD, ETC.)
OVERHEAD COSTS: HOUSEKEEPING, MEDICAL RECORDS
INPATIENT NURSING
ALLOCATION (STANDARD STEPDOWN)
NON-PATIENT-CARE-RELATED OVERHEAD COSTS
2
FINAL PATIENT CARE RELATED COST CENTERS (var. costs = 66% across all hospitals)
FINAL INSTITUTIONAL COSTS (fixed costs = 33% across all hospitals)
APPLICATION OF MEASURES OF RESOURCE USE AND ALLOCATION OF COSTS TO EACH DRG
UNIT COST DRG 1
UNIT COST DRG 467
III. THE RATE SETTING METHODOLOGY
APPLICATION OF INCENTIVES
FIXED COST SCREENS
INFLATION FACTORS
WORKING CASH INFUSION & CAPITAL FACILITIES ALLOWANCE
UNCOMPENSATED CARE & PAYER DIFFERENTIALS
PROPOSED HOSPITAL PROSPECTIVE BUDGET (Base year prices, projected inflation, and base year volume and case-mix)
PROCEDURES AND APPEALS
HOSPITAL CHARGE SETTING
RECONCILIATION
CERTIFIED REVENUE BASE (as 100% standard is reached)

NOTE 1

Before adoption of unified abstract and billing reports a complex merge was required at this point.

NOTE 2

Outpatients and outliers are processed separately based on historical charges.

Source: J. Hoshins, editor, Medical Practice Letter.

5.

Problems Anticipated:

The Need for Continuing Research and Development and New Policies

CHAPTER 5

PROBLEMS ANTICIPATED: THE NEED FOR CONTINUING RESEARCH AND DEVELOPMENT AND NEW POLICIES

The New Diagnosis Related Groups (DRGs)

There were a number of problems with the original 383 DRGs. Many were found by the personnel handling medical records, who emerged as the surveillance agents of the New Jersey system. One such problem was the fact that in certain hospitals many patients were admitted for routine chemotherapy, and were discharged with a principal diagnosis of primary cancer though the malignancy had been removed.

Sometimes the results of a "bad" DRG reached the media. The case of the $6,000 finger (23) became infamous and was repeated annually in the media for some time. The patient was admitted to a hospital in June 1980 with a finger fractured while playing softball. An internal fixation device was inserted and the patient was discharged after a 2-day stay. The itemized charges that appeared on the bill came to $804. Yet the DRG rate appearing beside these figures was $4,931.20. Additional charges for the physician brought the bill to nearly $6,000. The DRG that had best described the patient's condition was "fracture of bone, with amputation, arthroplasty of hip, other major operation."

It was possible to consider such a case as an exception -- a DRG outlier -- with a short length of stay (LOS) and have the appropriate party pay charges. A patient appeals process was designed in July 1980 and began to handle patient complaints and the inquiries of insurance companies in March 1981. It was not as easy to "adjust" the unfortunate publicity.

Although the complaints represented a small percent of hospital discharges,* the department revised the system for several DRGs so that such patients, whose itemized charges were far less than the DRG rate, could pay (or their insurance could pay) the itemized charges. The department also required hospitals to notify patients of their appeal rights in a statement attached to bills. It was evident, however, that the original 383 DRGs needed review and permanent change.

The original DRGs developed with New Jersey abstract data had accommodated Medicare had been required to use ICD-9-CM as standard coding (see ch. 3). The needs of New Jersey's rate-setters to modify the DRG system converged conveniently with this requirement. The Health Care Financing Administration (HCFA) awarded a grant in September 1979 to Yale University, Health Systems Management Group (81), to develop DRGs based directly on the ICD-9-CM. They set up a National Steering Committee, half of whose members were physicians, and half who came from other disciplines, representing Yale, HCFA, the States of New Jersey and Maryland, the

---

*The department received 486 requests for appeals from the initiation of the new system in 1980 through November 1981. 1980 admissions totaled 1,069,978, with 718,206 of these to hospitals on the DRG system. Eighty-eight percent of the appellants alleged excess charges; most were uninsured or partially insured patients.

Public Health Service, and the Commission on Professional and Hospital Activities (CPHA).

New DRGs were formed by these steps:

1. A large set of medical discharge abstracts were divided into clinical categories by principal diagnosis. These Major Diagnostic Categories (MDCs) usually specify organ systems (e.g., Diseases and Disorders of the Digestive System).

2. The cases within each MDC were split into groups that showed similar amounts of resource use, with LOS and cost both considered as meaningful variables in grouping, and with clinical judgment prevailing.

3. Physicians further reviewed these groups to identify the underlying clinical attribute of each (e.g., malignancy diagnosis, abdominal or perineal surgery, etc.)

4. Cases were regrouped so that all cases matching in these underlying clinical attributes remained grouped together, and others were removed from the group.

5. Steps two through four were repeated for each resulting group until the formulation of any additional group was not clinically meaningful.

Figure 5-1 gives two examples of the grouping process. One example is a fairly complex MDC (Diseases and Disorders of the Digestive System), and the other is a fairly simple one (Burns).

> The primary data used to develop the ICD-9-CM DRGs consisted of more than 1.4 million medical discharge abstracts from over 300 hospitals nationwide. The hospitals were all on the Professional Activity Study [PAS] abstract system in 1979, and they were selected to appropriately represent regions of the country, size of hospitals, teaching status, etc.
>
> A secondary data set consisted of over 330,000 records representing 1979 discharges from 33 New Jersey hospitals. These records contained cost information as well as length of stay data, allowing an independent financial analysis of the new DRGs. After decisions were made using the national data set, they were tested on New Jersey data. A number of modifications were suggested and incorporated....
>
> Extensive clinical input was provided by Yale's physician consultants, and by the physicians on the National Steering Committee. In addition, the new DRGs proposed for each MDC were reviewed by a team of New Jersey physicians with specialties appropriate to the MDC (23 meetings with a total of 65 individual physicians) and improvements were frequently suggested. The Council on Clinical Classification (representatives from the various national speciality societies) and physicians in several other States reviewed and commented on the proposed DRGs as well (23).

The opinions of personnel who handle medical records were also seriously considered.

Figure 5-1
MAJOR DIAGNOSTIC CATEGORY 06:
DISEASES AND DISORDERS OF THE DIGESTIVE SYSTEM

Surgical Partitioning

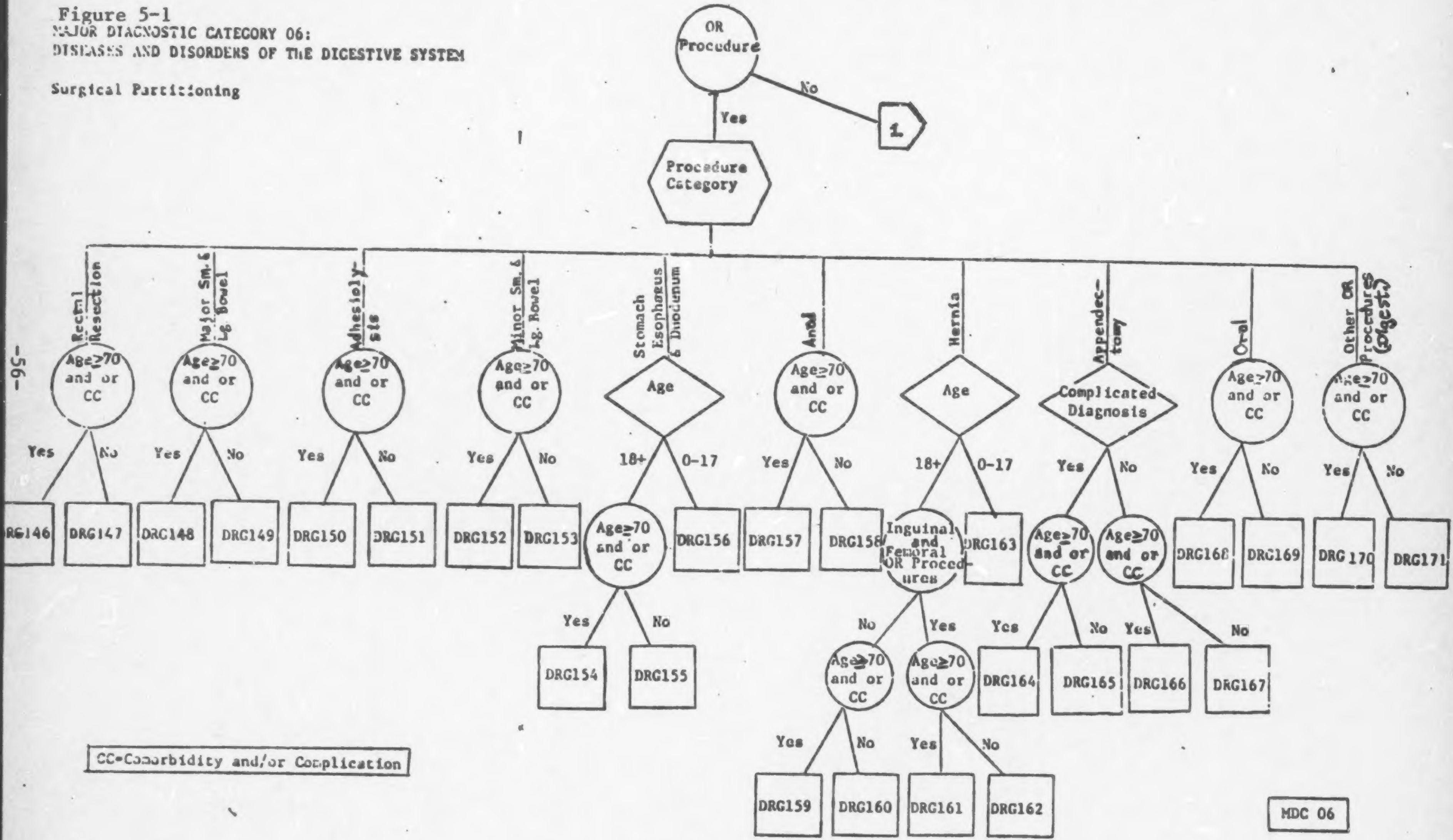

OR Procedure
No
1
Yes
Procedure Category
Rectal Resection
Age≥70 and or CC
Yes
No
DRG146
DRG147
Major Sm.& Lg. Bowel
Age≥70 and or CC
Yes
No
DRG148
DRG149
Adhesiolysis
Age≥70 and or CC
Yes
No
DRG150
DRG151
Minor Sm.& Lg. Bowel
Age≥70 and or CC
Yes
No
DRG152
DRG153
Stomach Esophagus & Duodenum
Age
18+
0-17
Age≥70 and or CC
Yes
No
DRG154
DRG155
DRG156
Anal
Age≥70 and or CC
Yes
No
DRG157
DRG158
Hernia
Age
18+
0-17
Inguinal and Femoral OR Procedures
No
Yes
Age≥70 and or CC
Yes
No
DRG159
DRG160
Age≥70 and or CC
Yes
No
DRG161
DRG162
DRG163
Appendectomy
Complicated Diagnosis
Yes
No
Age≥70 and or CC
Yes
No
DRG164
DRG165
Age≥70 and or CC
Yes
No
DRG166
DRG167
Oral
Age≥70 and or CC
Yes
No
DRG168
DRG169
Other OR Procedures (Digest.)
Age≥70 and or CC
Yes
No
DRG 170
DRG171
CC=Comorbidity and/or Complication
MDC 06

Figure 5-1 (cont.)
MAJOR DIAGNOSTIC CATEGORY 06:
DISEASES AND DISORDERS OF THE DIGESTIVE SYSTEM

Medical Partitioning

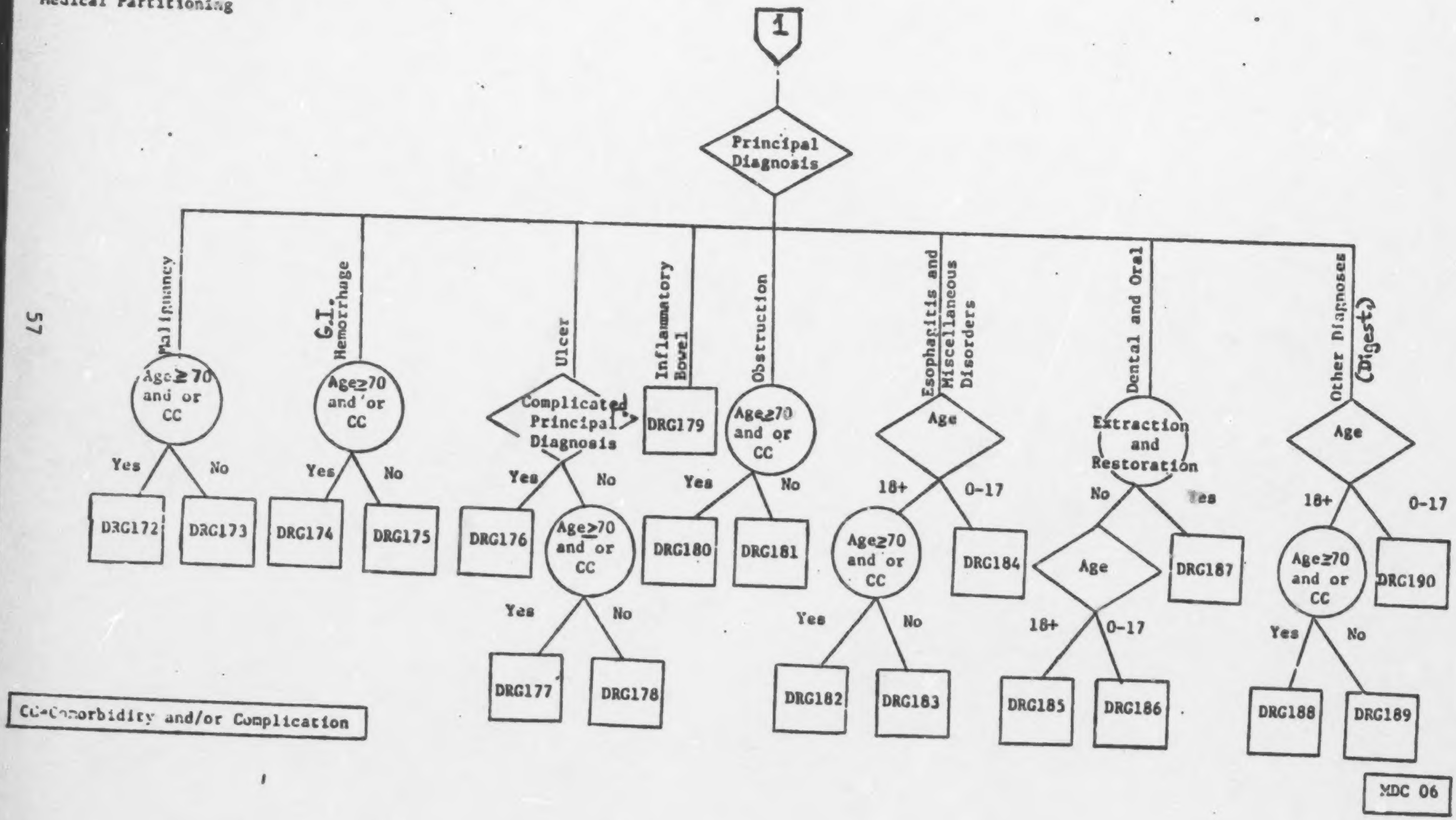
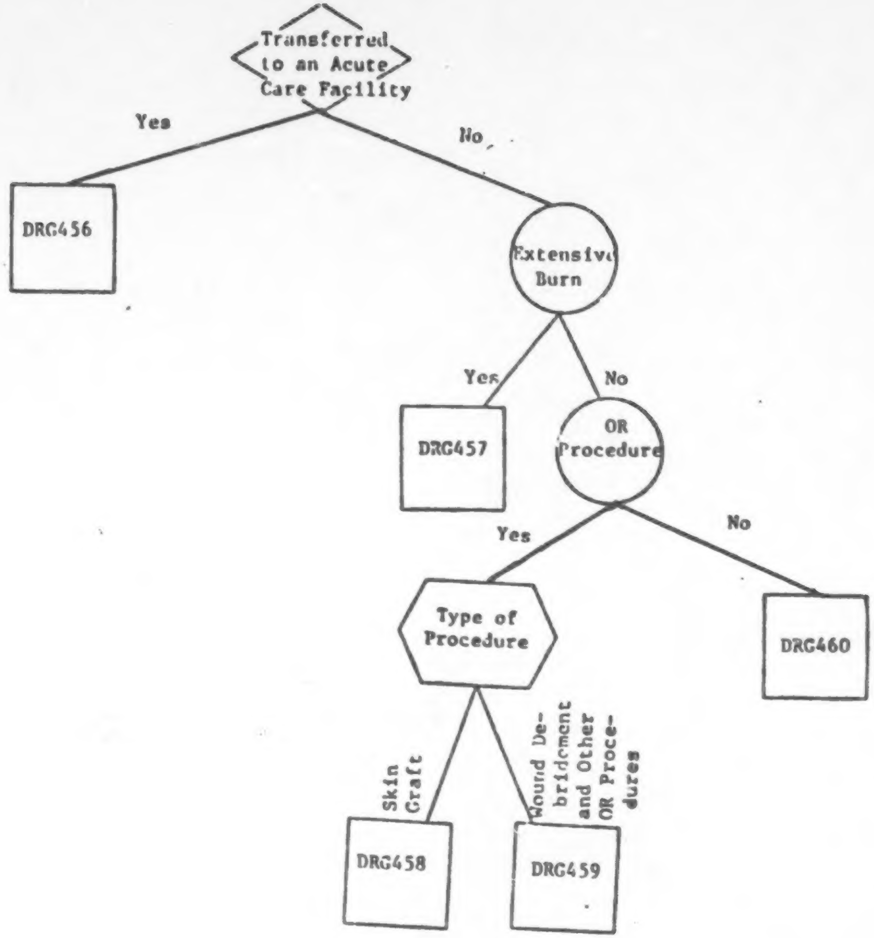

1
Principal Diagnosis
Malignancy
Age≥70 and or CC
Yes
No
DRG172
DRG173
G.I. Hemorrhage
Age≥70 and or CC
Yes
No
DRG174
DRG175
Ulcer
Complicated Principal Diagnosis
Yes
No
DRG176
Age≥70 and or CC
Yes
No
DRG177
DRG178
Inflammatory Bowel
DRG179
Obstruction
Age≥70 and or CC
Yes
No
DRG180
DRG181
Esophagitis and Miscellaneous Disorders
Age
18+
0-17
Age≥70 and or CC
Yes
No
DRG182
DRG183
DRG184
Dental and Oral
Extraction and Restoration
No
Yes
Age
18+
0-17
DRG185
DRG186
DRG187
Other Diagnoses (Digest.)
Age
18+
0-17
Age≥70 and or CC
Yes
No
DRG188
DRG189
DRG190
CC=Comorbidity and/or Complication
MDC 06

Figure 5-1 (cont.)
MAJOR DIAGNOSTIC CATEGORY 22:
BURNS

Medical and Surgical Partitioning


Transferred to an Acute Care Facility
Yes
No
DRG456
Extensive Burn
Yes
No
DRG457
OR Procedure
Yes
No
Type of Procedure
DRG460
Skin Graft
Wound Debridement and Other OR Procedures
DRG458
DRG459

The question of what patients would fall into "outlier" classes was also considered in this extensive process. High LOS outliers (patients whose LOS is above the high trim point of a DRG), and low LOS outliers (patients whose LOS is below the low trim point for a DRG) were determined based on the same review of records from the national data bases and from the several thousand New Jersey patient abstracts. LOS by DRG was displayed as a histogram with both standard and logarithmic trim points applied. Physicians reviewed the tentative trim points assigned in conjunction with the diagnoses and procedures in each DRG, and adjusted trim points where necessary based on their clinical judgments.

For the New Jersey rate-setting program, five other categories of patients were defined as outliers within the new 467 DRGs:

- SDS - patients admitted and discharged on the same date
- AMA - patients who left against medical advice
- Death - patients who died
- Clinical outliers - patients who fell into certain DRGs, usual those with titles such as "Other Diagnoses"
- Low volume outliers - patients who were assigned to a DRG for which it was not statistically possible to calculate a DRG rate because there were too few of them in the base year

Outliers are obviously atypical. Therefore, they were not billed at a DRG payment (average) rate, but by itemized charges. For many of such patients, it is evident that an average DRG rate would have been higher than the charges. There was also the delicate matter to consider in the case of death after admission, of a family receiving a bill in which the DRG rate might have been higher.

The new DRGs were thus developed for computer assignment. These items proved most important in a statistically and clinically coherent assignment of a patient to a particular DRG:

- Principal diagnosis
- Secondary diagnosis
- Principal and other procedures
- Age
- Discharge status (routine, against medical advice, transfer, death)
- Sex

The new DRGs and the computer program to assign patients to them also contained aspects that helped alleviate the problem called "DRG creep" or coding up (see ch. 6).

New Jersey has a very active medical records personnel association which conducts continuing education jointly with the department on coding and other DRG issues. The department regularly puts out an advisory newsletter addressing coding issues, errors in the ICD-9-CM AUTOGRP computer program and other such problems.

The use of the new ICD-9-CM DRGs became a mandated part of the New Jersey rate-setting system for the rate year beginning January 1982. The development of new DRGs (a total of 467) that do not suffer the weaknesses of the original set is an extremely significant accomplishment. These DRGs are more meaningful to physicians, and enable a greater management link between hospitals and admitting physicians. They are more uniform and much less dependent on coding practices that may differ among hospitals.

Relative Intensity Measures (RIMs) for Pricing Nursing Care*

As previously discussed, a flat rate per day was the interim measure used for distributing nursing costs to particular DRGs. A special task lasting throughout both experimental and implementation phases of the New Jersey project was the development of RIMs. This task was complete in July 1982 and will become the basis, once adopted by regulation, for assigning nursing costs to DRGs in the rate year 1984 (for about 20 additional hospitals) and 1985.

RIMs were developed through a Case-Mix Nursing Performance Study in eight New Jersey hospitals selected as representative of hospital location, teaching status, and case-mix complexity. The study hospitals also levels of nursing skill in the participating hospitals. Registered Nurses, Licensed Practical Nurses, Attendants and Aides all documented the time they spent with each patient on each shift, and by clusters of DRGs.**

Data were collected for five categories of "nursing activity:" Assessment and/or Planning, Teaching, Emotional Support, Medications and Treatments, and Physical Functioning (or Activities of Everyday Living). Data were also collected for four categories of "non-nursing activity:" Transport, Dietary, Housekeeping, and Other.

The use of RIMs is not intended to increase the total nursing budget, but to apply more weight to the DRGs of patients requiring more nursing, and less weight to those requiring less. The care of a patient in traction with a back disorder is thus less costly, and that of a patient with a partial stomach resection is more so. Just as the rate for a DRG reflects the intensity of resources its cases require, it will also reflect the nursing they require. Hospitals with more intense nursing cases may receive more revenue out of the aggregate amounts for all inpatient care. But hospitals with cases requiring less nursing care, as measured by RIMs, will receive less.

---

*Much of this section is taken from a presentation to the Health Care Administration Board in the spring of 1982 on the results of the RIMs study (31).

**Nursing advisory groups determined that requirements for nursing care were often similar within MDCs. Therefore, DRGs were clustered in accordance with the judgments about nursing requirements.

The RIMs equations have resulted in a computer program that searches for principal diagnoses, surgery, admission status, and other data found to be related to intensity of nursing care.

In addition to more equitably reflecting the nursing resources required and their costs in different hospitals with different case mixes, the RIMs study also permits the computer production of nursing management reports. These may help in staffing units that have different types of patients. They can be used in a DRG appeal for cases where a new medical technology changes nursing intensity requirements (and costs). They may indicate needed changes in nursing management, e.g., showing where nursing costs are higher per case than the State standard, or where excessive time is spent in non-nursing activities, hence contributing to higher costs when a delegation of personnel to these activities would result in lower costs.

Measuring the Quality of Care in a DRG System: The Relationships to Reimbursement

When there is worldwide economic recession, all countries become concerned with government costs, and especially about the control of excessive inflation in the government's underwriting of programs like health insurance. Just such concern has been raised in the United States with regard to Medicare and the Social Security system itself. As the urgency to contain costs heightens, the concern for the quality of medical care tends to diminish.

The climate was different when the New Jersey project began with the help of Federal support. Indeed, the New Jersey program included an "attempt to address the complex relationship between cost and quality of patient care" (40).

The rich data base provided by the DRGs was judged to include data that might be used to measure quality of care. It was believed that additional data obtained about individual institutions, including their finances and billing, might contribute to measuring the quality of inpatient care, and to comparing different institutions in this regard (8, 12).

The following are some attributes commonly accepted for measuring or auditing the quality of medical care:

- the quantity of care
- the types of care used to treat various diseases
- the process of delivering care
- types of providers
- provider behavior
- timeliness and appropriateness of care
- outcome (the patient's final condition or well-being).

With the availability of the DRG data base and following these philosophies, the department employed Donabedian's concepts for measuring quality (7):

1. Structure: the organization of the health care system or subsystem within which patient care is delivered.

2. Process: the means and manner in which care is delivered.

3. Outcome: the effect, if any, upon the patient's illness, condition, or state of health attributable to the delivery of care.

The department recognized that the data base being developed for the DRG prospective reimbursement system might include a number of these elements:

> The structure within which medical care occurs, the hospital setting, may be measured by the vast assortment of institutional characteristics and cost data available to the Department of Health primarily through the SHARE system. Indicators of process may be culled from medical discharge abstracts, and data from the Projects' ... nursing studies. Indicators of outcome may be selected from medical discharge abstracts and the results of the Project's Nursing Diagnosis Pilot Study (4).

As early as the project's first annual report, there were examples of DRG-specific and patient-specific quality measures. The latter also presaged the importance of outliers.

> The case-mix methodology identifies instances in which the medical care resources devoted to treating patients exceed medical practice norms controlling for types of diseases, operative procedures, and patient's age. Such aberrant cases are referred to as outliers.... Not only may outliers be identified by the excessive consumption of bed days ... but they may also reveal cases where the consumption of patient care dollars is inordinately low when compared with statewide medical practice norms. Such cases may be suspect with regard to quality of patient care (4).

There was also strong concern to answer the often-repeated charge that cost containment would certainly compromise quality. As noted earlier, the State laws supported health care of the highest quality at reasonable cost.

> The department has been committed to the development of a system that would reimburse efficient hospitals fairly but at a reasonable cost to the ultimate consumers of the care. It has been committed further to the devising of a system that will analyze the actual costs of the resources for which each facility cares (case-mix). Finally, it has been concerned that a way be found to set reimbursement rates that will not impair the quality of care offered, but will, instead, support and maintain the kind of health care that restores patients' health and productivity (17).

In the original proposal (August 1976) to the Social Security Administration, the department offered as part of its experimental system a task entitled "Development of Quality Measures:"

> The purpose of this task is to establish a group of DRGs about which there can be medical consensus concerning outcomes that should take place if a patient is properly cared for, or if certain processes of provider behavior can be determined (39).

The commissioner convened a Physicians Advisory Committee for the task. Its members were selected with advice from the New Jersey State Medical Society, the New Jersey Association of Osteopathic Physicians and Surgeons, the New Jersey Foundation for Health Care Evaluation, and the University of Medicine and Dentistry of New Jersey. Representatives of internal medicine (including cardiology), surgery (including orthopedics), pediatrics, obstetrics and gynecology, family practice, and oncology were especially sought. The committee, chaired by the commissioner, a physician, selected 28 DRGs, most of which accounted for the highest volume of admissions to New Jersey hospitals. Two DRGs, one representing cancer and one trauma, were chosen because their cases consumed many resources, and it was felt there should be consensus about the quality of these patients' care.

Small groups organized by specialties worked in many meetings to arrive at measures of quality. Members from the generalist disciplines (family practice, internal medicine, etc.) rotated among the groups, especially in those cases where there was debate about surgical vs. medical treatments. The small groups reported back to the full body for much discussion of the measures, considering both process (the consistent provision of certain diagnostic, investigative, and therapeutic procedures), outcomes, and the frequency with which they should or should not occur.

All proceedings were assisted by representatives of the New Jersey Medical Records Association, the staffs of Professional Standards Review Organizations (PSROs), and the special department team assigned to the task.

Another subcommittee was formed to look at the proposed quality measures as they emerged and to judge whether data available through current abstracting systems would suffice for the measures. The subcommittee also looked at the compatibility of the measures with Professional Standards Review Organization (PSRO) standards and criteria, the impact of obtaining the data required on medical records personnel, the estimated cost of those data, and whether the department's computerized system could extract the quality measures. This subcommittee presented a report to the Physicians Advisory Committee that detailed what was retrievable from the existing data, and what measures might be extracted from at least one abstracting system in use. Those criteria remaining would need to be added to the required minimum data set. This subcommittee recommended that a pilot study be conducted on the feasibility, costs, and benefits of adding to the minimum data those quality measures not yet accessible from the abstracts.

This initial phase of the work, completed in the experimental period of New Jersey's DRG project, culminated in a spring 1978 meeting of the Physicians Advisory Committee. The members approved a set of 197 measures of quality for the 28 DRGs they had chosen. They discussed and tentatively endorsed the department's Statement of Policy (17), with the agreement that some way would be found to relate institutional quality profiles to reimbursement. The only principle fully stated, however, was "... the goal is to identify the cost of providing the minimum quality of care requirements ... in order to insure that no average price per DRG is lower than cost. This establishes a 'floor' below which the price for any DRG never would be allowed to fall.... [I]t is expected that the average price per DRG will permit a higher level of quality than the minimum identified by the Committee" (17).

The policy statement also committed the department to delegate quality correction to some peer review mechanisms, perhaps external to the hospitals: "... some institutions may be found with a low performance [quality] profile, or within some facilities, there may be specific DRGs in which the adequacy of care may appear less than average. The department does not propose to be the agency for determining the reasons for these problems, or for implementing indicated corrections. The findings will be forwarded ..." (17) to the appropriate utilization review organization. The department indicated in the statement, however, that it might expect a report to the effect that corrective action had been taken and was being monitored. The importance of these actions was recognized for both planning and reimbursement decisions.

The professional organizations that the committee members represented withheld their final endorsement of the statement until a pilot study could be conducted in hospitals already on the DRG system. This study would determine the cost of collecting the quality measures, the reliability of these data, and whether institution-specific quality profiles could be generated.

Modifications to the original Federal contract to implement the system in all New Jersey hospitals included a task to continue the study of quality parameters and to conduct the pilot study. The department issued a request for proposals. It is of some interest to note that only one private insurer bid, and its proposal was not in keeping with the task. Thus, with Federal funding and approval, the department established its own staff to carry out the pilot study in six hospitals. Although they were volunteers, these hospitals proved to be representative of acute-care hospitals in the State with respect to size, location, percentage of indigent patients, and teaching status.

Four abstractors were hired and trained. Manuals designed around the new data criteria guided their search through medical charts, face sheets, abstracts, and later through the Uniform Bill-Patient Summary (UB-PS) forms. The abstractors analyzed discharges for the last 6 months of 1979 to derive a sample of cases in the selected DRGs out of 18,552 discharges. The choice of sample size was in part determined by the volume of cases in a given DRG. The sample size chosen was 6,072 cases, representing 32.7 percent of the total discharges available for analysis. The final sample size, for reasons of record completeness or availability, was slightly smaller.

Finally, the abstracted data were translated into a DRG-specific computerized model to see whether comparative profiles could be generated that showed each hospital's compliance with the quality parameters. The criteria from which the profiles were drawn, DRG by DRG, were arranged in the following format:

- Need for admission (e.g., for each patient in the DRG of hypertensive heart disease, there should be at least one record from physician or nursing notes of blood pressure greater than 170/100)
- Length of stay
- Investigative services (e.g., for each patient in the DRG of acute myocardial infarction, two enzyme studies should have been performed

more than 48 hours apart. For the DRG of benign tumor of the uterus or ovary with surgical removal of the uterus, pregnancy tests should have been performed with negative results in all patients under the age of 50)

- Therapeutic services
- Procedures
- Medical history
- Physical exam
- Patient education before discharge
- Complications and expected outcomes

Results of the Pilot Study

The final report of the Pilot Study on Quality Measures (19) accepted by the Physicians Advisory Committee concluded the following:

- For high-volume DRGs on which there had been medical consensus about well-defined measures of quality, a small staff can complete quality abstracting forms.

- These forms can be used to generate comparative quality profiles of institutions, which can be entered into the central data bank.

- Medical records personnel can use the expanded data set, an important consideration because some documentation on quality criteria might be available from the billing information in the UB-PS, not from discharge abstracts. Such information could include whether or not a specific diagnostic or therapeutic service or test was performed. Reports from the pharmacy cost center might even be used to trace whether antibiotics were ordered and dispensed before cultures were reported.

The pilot study also analyzed the cost of preparing quality profiles as a regular activity. Based on 1979 discharges and 1981 dollars, the department concluded that a central staff of abstractors could do this work for about $144,000 annually if certain assumptions were followed:

- That the Physicians Advisory Committee would rework their quality parameters in light of the new DRGs.

- That the committee could make a final determination about the minimum measures required, and that most would be retrievable from the UB-PS without expanding and revising these forms to save printing and reprogramming costs.

- That a 10-percent sample of the selected DRGs would suffice to generate quality profiles comparing all hospitals, or that hospitals could be added gradually to the system as they had been in setting rates.

- That 28 to 30 DRGs out of the total 467 would continue to generate valid quality profiles of institutions.

Quality and Policy

To recapitulate, a data base used primarily to develop prospective hospital budgets can also measure quality of medical care. It proved more difficult to formulate policy about the use of such profiles in setting rates.

Even in the pilot hospitals, all volunteers, the comparative profiles showed marked differences among the institutions in complying with some quality parameters. For example, one criterion expected for hospital admission of cases falling into (old) DRG 121 (acute myocardial infarction) was that all patients would show an ECG positive for damage, or an abrupt onset of chest pain accompanied by a fall in blood pressure, profuse sweating, or shortness of breath. There was evidence of these measures 100 percent of the time in four of the hospitals, and over 90 percent in the other two. But for a number of criteria that would be expected in physical examinations in 100 percent of the cases, hospitals' documented performance ranged from 49.2 percent to 100 percent. (Endoscopy was the least likely procedure to be performed.) Patient education -- instructions to patients about their physical limitations after discharge -- was not given, or at least not charted, more than half the time, except in one hospital.

For (old) DRG 59 (hysterectomy for benign tumors), a pathology examination of the removed uterus was recorded 100 percent of the time in only two of the hospitals.

The members of the Physicians Advisory Committee took note of such variations -- at least in reporting. They believed the parameters should be perfected, and when and if funds permitted, ongoing profiles should be generated by the department so that outside peer review groups, including their own, could receive information about consistent aberrations and pursue corrective action. They also felt that hospitals should be able to receive their own profiles, and hoped that hospitals would pursue corrections

Although there is no further Federal funding for completing quality measures for the new DRGs, the physicians on the committee are voluntarily continuing their efforts.

No final policy has been developed about using quality profiles in setting rates. A subcommittee of the Physicians Advisory Committee examined the original policy statement and recommended that no disincentives be applied to institutions with consistently high costs yet low quality performance. On the other hand, they did not recommend that incentive payments be made to those achieving reasonable costs and high quality performance. They intended to set a minimum for quality performance, a set of standards that should be expected of all New Jersey hospitals, and not suggest rewards for doing what was expected. They concluded that most DRG appeals (see ch. 4) would be based on the use of advanced technology to produce better quality of care. The appeals would, therefore, have to rely on data about both quality and costs.

They recommended the DRG appeal process as the mechanism for relating quality to rate decisions. The committee offered to serve as clinical advisor to the Hospital Rate-Setting Commission for those appeals, and was accepted by resolution in the spring of 1982 to accomplish this task. The members will review quality profiles to compare hospitals with appeals to others. They will also review any audits that PSROs may have performed, along with any other relevant data.

If there were greater Federal interest in using the DRG data base, for which the Federal Government already paid, to measure and compare hospitals in quality of performance and to make related decisions about reimbursing care of inferior quality, the New Jersey Commissioner's Physicians Advisory Committee might provide well-informed advice.

The results of the pilot study have not been fully analyzed for correlations between excessive costs and high quality, or underspending and low quality. However, no such correlation was revealed in a cursory review of certain DRGs in the hospital showing the greatest quality compliance and in the hospital showing the least. A high-compliance hospital had lower costs than standard for one of the cardiac DRGs and higher costs for another. A low-compliance hospital had high spending for both -- which meant it spent more than the standard amount, but recorded less frequent performance of expected procedures, interventions, and treatments than others in the pilot study. Such results deserve further study, since the question of the relationship between cost containment and quality remains an important one to answer.

The Role of Peer Review Organizations (PROs)

In July 1980, the Health Care Administration Board approved the adoption of amendments to the department's Procedural and Methodological Regulations (Sections 8:31B-3.76-3.82, known as the Chapter 83 Utilization Review Regulations) (37). Many aspects of the DRG-based reimbursement system pointed to the need for organized outside clinical peer review. First, PSRO representatives had been members of the Physicians Advisory Committee for the Quality Measures Study. Second, the PSROs had accepted certain responsibilities for resolving patient complaints. These complaints could result from incorrect DRG assignment, or DRG billings that appeared inequitable. When payer coverage was denied for admissions deemed medically unnecessary, the PSRO appeals process also intervened.*

The regulations provided payers the right to select review organizations. The department's contracts for utilization review organizations (UROs) placed all inpatients, regardless of payer, under the examination of these bodies. UROs also had to be qualified by the Department of Health. URO activities are financed by additions approved by the Hospital Rate-Setting Commission to hospital rates, according to the number of each payer's admissions. This payment to the UROs was a subject of some controversy, particularly from those hospitals that performed review by delegation even though these hospitals received a direct payment proportional to admissions for their increased labor.

---

* Guidelines for a Patient Appeals Process [NJAC 8:31B-3.78(a)(i)(vi)] have been published.

Initially, only the eight PSROs in New Jersey applied to serve as UROs. Required to carry out certain activities, they were certified to begin reviewing all inpatients by March 1981.

The DRG system changes the nature of PRO activities. Analyses of LOS and denying payment for some stays that exceed the norm become less important. In the DRG system, hospital revenue budgets and DRG rates are computed at the beginning of the calendar year. Thereafter the hospital receives its DRG payment rate from each payer, less only any earned differentials. The system provides incentive because a hospital's DRG rates are set, and the hospital may maintain its efficiency yet fall below the State standard in spending and realize a "DRG profit margin."

This system requires crucial links among an institution's costs, efficiency, and concern for the quality of care. The formal mechanisms of utilization review and quality assurance for "typical cases" (DRG inliers) and "atypical cases" (DRG outliers) may guarantee the integrity of specific DRG costs and the accuracy of DRG assignment.

> While the department's ... reimbursement methodology permits the calculation of an arithmetic-mean cost per case, the reasonableness of this mean ... is a function of:
>
> a. The accuracy of the data used for DRG assignment,
>
> b. The statistical homogeneity and clinical meaningfulness of the DRG itself, including the specification of LOS trim points, and
>
> c. The necessity and appropriateness of direct patient-care costs incurred by the conduct of clinical practice and medical prerogative (9).

It has also been alleged that a system that pays for discharging patients, rather than for maintaining them may lead to increasing admissions. Recent studies have found this not to be so (64), and in New Jersey, both LOS and total admissions have decreased some in the hospitals on the DRG system since 1980. But care should be taken to monitor inappropriate utilization of hospitals, which could occur by rejecting alternative sources of care as well as through unnecessary admissions or premature discharges with readmissions.

Thus, the department's initial requirements for UROs centered on functions important to evaluating the reimbursement system based on DRGs:

- o Develop a utilization review plan to certify necessity of admissions, appropriateness of care and reasons for continuing patient stays
- o Review hospital procedures in discharge planning, and coordinate patients' termination of benefits, admissions, and denials of stay

- Monitor medical records for the accuracy of data abstraction by auditing the principal diagnoses and procedures to ensure correct DRG assignment
- Develop profiles of ancillary services to validate the reasonableness of patient charges
- Implement procedures to adjudicate patient appeals of excessive charges (56).

Hospitals could still be delegated review, but the UROs were expected to develop policies and procedures for permitting and for suspending delegation.

By 1982, the department was ready to conduct its review of the UROs progress to determine their recertification or decertification. It asked for documentation of the methods that were being employed to conduct the reviews, and reports on any special areas of study such as admission and readmission, integrity of secondary diagnoses, and trends in same-day surgery and outliers. Many UROs did not comply completely.

The Hospital Rate-Setting Commission prepared to hear applications from new UROs, including any that might conduct reviews statewide, such as the Physicians Advisory Committee, along with reapplications from existing bodies. Since payers could contract directly with UROs, the department began developing a new proposal to determine the rate to pay UROs. The department staff that monitored URO compliance also prepared a guide for the Hospital Rate-Setting Commission (9). This guide established that a potential URO must submit a sampling plan to qualify. The sampling plan should be based on methods suggested by the department to accomplish the following:

- Monitor the integrity of DRG trim points
- Identify any premature patient discharges by conducting studies of admissions and readmissions
- Reduce misassignment of DRGs and ensure the reliability and validity of UB-PS data by conducting blind audits of the UB-PSs
- Reduce high negative-variance DRGs by performing trend analyses of high volume DRGs and relating these to LOS and charges
- Assess the impact of same-day surgery in reducing inpatient lengths of stay by designing and analyzing profiles and implementing a review of same-day surgery
- Identify the overutilization of ancillary services by reviewing standard DRG management reports and taking corrective action when appropriate (9).

The department has enjoyed the support of physicians, which is essential to the development and success of a clinically oriented payment system. This support and the system's success in containing costs seem to result primarily from the common language it provides between those who set payments and the practitioners who order and use the costly resources. The role of clinical peers is thus of continuing importance. But their role is being redefined, and they have incentives to adapt accordingly since all payers contribute to the support of their time.

6.

Problems Not Anticipated

CHAPTER 6

PROBLEMS NOT ANTICIPATED

The Problem of Assigning Patients to DRGs That Have Higher Rates: "DRG Creep" Payment

When the Diagnosis Related Group (DRG) system was implemented statewide in New Jersey, some claimed that computer programs that coded patients for reimbursement might be used to assign them to DRGs that paid a higher rate. Journal articles suggested the possibility of this phenomenon (62). The department's answer to this possibility was that if this happened in a hospital consistently, the hospital would vary from statewide standards sufficiently to be subject to financial penalties (14). It could therefore suffer a loss in subsequent years' revenues. Furthermore, department staff also audited DRG assignment.

A number of new refinements in the system prevent what was termed "DRG creep," although the department never had evidence of anything but general integrity on the part of the physicians, nurses, and medical records personnel who make the charts and discharge summaries that provided the abstract data.

The New DRGs

All the new DRGs are based directly on the ICD-9-CM code, so there is neither need nor possibility of converting from one code to another nor therefore of making some mistakes that would lead to DRG misassignment. Primary diagnoses are based on the ICD-9-CM code.

All coded secondary diagnoses and procedures are examined by the computer program GROUPER in its assignment of DRGs. In the old (383) DRGs, only a first-listed secondary diagnosis (Dx2) and/or principal procedure (OP 1) were used for DRG assignment. The sequence of listing these secondary diagnoses and procedures was left to the hospital, and could give rise to the coding of a patient into a higher paying DRG. The establishment of new DRGs included the clinical judgment that if a secondary diagnosis which was actually treated or made a legitimate difference in length of stay (LOS), then the hospital should be reimbursed accordingly. But the documentation of these selected secondary diagnoses or procedures had to be in the medical record. The new AUTOGRP computer module to assign patients examines all secondary diagnoses and procedures and identifies only those that were previously determined to make these differences.

Formation of some DRGs also depends on the presence of a "substantial comorbidity" (a condition that, in conjunction with the principal diagnosis, will cause an increase in LOS by at least one day in at least 75 percent of the cases). The computer also searches for these preselected comorbidities or complications, and assigns the patients to a different DRG only when these are found. Manual DRG assignment is not routinely done since it is neither efficient nor reliable, and the uniform Bill-Patient Summary (UB-PS) makes it unnecessary. Furthermore, the charting physicians could not have sufficient knowledge of all the computer combinations to invent the "right" comorbidity to effect a change in DRG assignment.

The Uniform Bill-Patient Summary (UB-PS)

The uniform patient information all New Jersey hospitals must submit diminishes the possibility of assigning a code that pays a higher rate or of coding mistakes. Such mistakes did occur when several different abstracting systems were used.

The Role of Peer Review

Utilization review organizations must perform blind audits of UB-PS reports, assisting assurance of proper assignment of DRGs. "Incorrect assignments can result in 'DRG creep' and can incur inappropriate apportionments of direct patient care costs.... Blind audits will minimize DRG misassignment" (9).

Reconciliation

The reconciliation process provides some protection from "DRG creep." The hospitals' net revenue comprises its approved direct patient-care costs and approved indirect costs and other financial elements, all derived from its base-year case mix and audited costs, or formulas for approved additional costs. If it is found on reconciliation that a hospital has collected too much or too little, each payer's variance from the actual schedule of rates is calculated. What was overcollected is deducted from the following year's payment rates, while what was undercollected is added to the next year's payment rates. If the hospital wanted to contend that its case mix had changed dramatically, and thus cost the hospital more, this would become the subject of a DRG appeal. The hospital would need to prove that some new service, technique, or procedure it offered accounted for the change in case mix and that resulting costs, benefits, and improved patient outcomes warranted the increased revenues.

"Bad Bills" and Other Payer Problems

New Jersey's contract with the Health Care Financing Administration (HCFA) to develop a prospective revenue budget based on rates set by DRGs also required that payments would be made according to DRGs. In other words, patients receiving their bills saw and were requested to pay the rate for the DRG to which they were assigned. While multiple payers each paid their share of the new financial elements (charity care, working capital, etc.), they had different subscriber agreements with different conditions of coverage. Commercial insurers and major medical contracts often required that the patient pay a certain percentage of the bill. To accommodate these arrangements, New Jersey hospitals, which were required as of May 1980 to bill by DRGs, issued their bills listing both traditional charges and the DRG rate. The DRG rate was usually lower than itemized charges. But, when itemized charges were lower than the DRG rate, the complaints were vigorous.

In a national system like Medicare, one might think the patient would never see the bill. But Medicare patients do pay a share of their bill -- the deductible -- and they worry that attempts might be made to collect from them the differences between a Medicare controlled rate and the hospital's traditional charges, even though such attempts are prohibited by law. New Jersey has experienced difficulty in stopping some hospitals from trying to collect from Medicare patients. Thus, they are concerned with review of their bills. Costs are sometimes shifted to individuals, and the prudent buyer philosophy does not escape the elderly. Medicare will still pay for outliers and outpatients on the "reasonable cost" basis. This requires itemized charges on bills.

Misunderstood bills proved to be the most grievous problem for the department and for New Jersey's hospitals. Self-pay or pay-sharing individuals were not the only ones to complain. Small commercial insurers and self-insured benefit funds also believed they had been victimized by the system.

> Every DRG rate is built on a series of averages, including the average costs per case in each hospital in the base year, statewide average costs per case, and cost and revenue calculations based on allocation methods which themselves rely on averages. The per-case price itself is an average, since it constitutes the average allowable revenue to which a hospital is entitled ... in a given DRG. But no patient is average, and by definition no individual case can be. Payment by the case thus appears, in forcing individual instances into a single average, to be both arbitrary and inequitable (74).

Large payers rapidly accrue the benefits of this average, but smaller volume payers have less reason to be confident that everything would average out for them. It is a difficult task to make the public understand that all rate-setting systems are built on averages, as are all methods of setting hospital prices.

The department dealt with these "payer problems" in a number of ways. It attempted to educate the relevant parties in two ways. First, it formed a committee on billing and payment to consider billing issues. A Billing and Payment Manual (3) resulted to address the major issue -- price per case payment sometimes divided between the patient and third-party payers.

Second, the department assigned a staff (later the Reimbursement Team) to handle the inquiries of union administrators of health and welfare plans, self-insured group administrators, and other small payers, and to hold a series of meetings with them. When hospital claims were reviewed at the end of the first year, even these small payers recognized the system's benefits. Health maintenance organizations (HMOs), particularly, were given technical assistance in preparing their requests for payer differentials.

Immediately after beginning DRG-based billing, a number of patients did receive aberrant bills. Most of these patients had been classified in the few DRGs whose actual cost variance from the average rate was particularly extreme. The original problem arose largely for statistical reasons -- the first discharges under the new system tended to be for shorter stays. To remedy some of these problems, the department changed some trim points and set up the process for formal patient appeals.

Even major payers like Blue Cross made arguments against paying by the case. They contended that DRG rates were inadequately sensitive to age differences, so that the "average" price per case was too low for Medicare, and too high for those that insured younger populations. This observation did lead to a section in the Payor Reconciliation Regulations that required separate reporting of days that hospital inpatients awaited nursing home placement. An adjustment of the payment rate was then calculated. The new

DRGs also use age much more frequently as a variable in partitioning DRGs to eliminate the problem.

Two arguments remain against payment by the case, and both will surely be raised about any national attempt to pay for hospital care by DRGs. The first is whether the DRG average is better than some other method of defining reasonable costs. All rate regulation seeks to achieve reasonableness by comparing various producers' costs for defined services. The department had purposely discarded the per diem method of averaging:

> The patient day is grossly inadequate ... for such comparisons. The logic of case-mix reimbursement is that, if one can define a sensible measure of hospital output, then comparisons of reasonableness would be more accurate, more fair, and more effective in providing incentives to increase efficiency. DRGs are the best available measure of hospital output, and the entire system based on them seeks to define a 'reasonable cost' for treatment of cases of a defined type (74).

The other argument concerns the appearance of the bill. The New Jersey Hospital Association advocated a system of "controlled charges." Under their proposal, all patients would pay itemized charges. At final reconciliation, the revenue the hospital actually received from those charges would be compared to allowable revenues per DRG, and appropriate adjustments made. In repeated letters read before the New Jersey Health Care Administration Board, HCFA silenced this request by threatening to withdraw the Federal waiver. The system too closely paralleled the "Guaranteed Inpatient Revenue" concept already used in Maryland, and waivers at that time were granted only to untested systems. But the department also had its own arguments against billing by "controlled charges":

> ... it substantially weakens the incentives inherent in per case payment. It is clear that the incentives for hospitals and their physicians in payment on the basis of a flat prospective rate are already having a significant impact.... Lengths of stay are falling, utilization of ancillary services such as laboratory and radiology is rising less quickly.... Under controlled charges, hospitals would reap the benefits of such efficiencies but only on final reconciliation. In the meantime, they might experience significant cash flow problems. On a per-case payment system hospitals must reduce costs immediately to avoid negative cash flow; under controlled charges, they could increase charges to cover increased costs, and deal with the consequences a year or two from now. It is [also] not clear how well charges can be 'controlled' at reconciliation. Imagine an inner-city hospital with a Preliminary Cost Base of $20 million which, in 1981, because of inefficiency or inadvertence, billed $23 million of itemized charges. On January 1, 1982, it increases its charges 10 percent for inflation, while still failing to control its costs. When reconciliation is completed on June 1, 1982, it would have to lower its charges more than 30 percent to realign them with approved rates. It is hard to see how a hospital in that situation could remain solvent. It is also hard to see how a responsible Rate-Setting Commission could willingly push it into bankruptcy, but if it doesn't, then the controls on charges are hollow (74).

Using hospital charges as a basis for cost finding and cost allocation to DRGs or to any other unit that measures the hospital product has been strongly and frequently criticized:

> Hospital charges are universally recognized to be wildly arbitrary, capricious and unsystematic. In 1978, the mark-up on direct costs among the initial 26 hospitals ... varied by as much as 70 percent for Delivery Room services. Semi-private room charges may vary from $99 to $170 per day.... Nor are the odd variations of hospital charge schedules entirely random. For example, Medicare uses a ratio of charges to costs at the departmental level in establishing its reimbursement to hospitals.... [H]ospitals receive more Medicare reimbursement if they put high mark-ups on services used predominantly by Medicare patients and low mark-ups on services in the same Department used by non-Medicare patients. Thus, hospitals might charge $100 for a hip x-ray that costs $30, but only $40 for a shoulder x-ray that 'costs' the same (74).

For these reasons, the New Jersey project's cost finding for some large portions of direct patient care, such as nursing, was attempted from the start in a different way (see ch. 5). Its Reimbursement Team monitors hospital markups of direct costs. The UB-PS now itemizes charges in coded units, not dollars, saving some of the embarrassment that occurred with previous bills. The UB-PS is acceptable to all payers in New Jersey, and clearly shows the patient which payer is responsible for which elements of the bill. Even before the UB-PS was developed, some hospitals simply changed their formulas for determining the ratio of costs to charges so that charges summed to the DRG rate.

The argument for billing by DRGs, rather than by controlled charges, may be even stronger when the universe of patients and payers is sufficiently large. When this population is large, there is a greater chance that any particular bill determined by DRG will more likely be representative of the treatment actually provided in that particular case. No DRG is completely ideal in this regard, however. Thus, in setting the payment rates, the department chose to set a standard rate for each DRG using the proportion of each hospital's own costs according to the DRG's coefficients of variation. For large payers, these methods of averaging proved valid. In fact, after the first year of payment by DRGs, one commercial insurer reported that its DRG bills had been roughly equal to itemized charges, but that its total payments had been 13.5 percent less than what it would have been for the same services in the previous year.

Equity for individuals is also influenced by the way in which trim points are set and by appeals. Time was granted to hospitals for correcting excessive costs. The system was designed to move from the preliminary cost base to a final certified revenue base. As it happened, largely because of the sensitivity of the new DRGs, the addition of more and more hospitals to the universe, and management corrections, more DRGs in 1982 had smaller coefficients of variation. Thus, the standard price per case that has been determined for many DRGs does not require any further statistical treatment.

Controlling Capital Expenditures

Reimbursement systems cannot fully address cost containment without controlling capital costs. Prospective budget systems, whether priced by DRGs or some other unit, must be linked with policy mechanisms that provide for adequate capital planning. Furthermore, decisionmakers need to know the total amount over time that the public wants to spend on health facilities at the expense of other capital needs (20).

In New Jersey and in the nation, the control of health capital planning has changed rapidly as the economy has endured inflation, recession, and high interest rates. The department did profit from early and successful State-mandated certificate-of-need laws, and a State Health Planning and Development Agency located within the department in the same division as the program for setting rates. But even so, the economic climate limited the contribution that the DRG project could make to capital expenditures decisions. In such circumstances, the project could only help refine decisions about capital expenditures through reimbursement controls. Unforeseen events in the general economy pushed ahead of coherent policy.

The rate-setting system has addressed capital controls through several phases in the economy:

1. In early 1979, inflation was accelerating. Financial markets imposed tighter credit restrictions and higher interest rates. New Jersey had created a Health Care Facilities Financing Authority in 1972 to sell tax-exempt bonds for approved construction and large equipment. In 1979, the interest rates of these tax-exempt bond issues for hospital construction rose from below 7 percent to 8.75 percent. Construction prices were also inflating. The department formalized a position through an interest break-even model, which in effect delayed the construction of some projects.

Interest rates did not fall, and hospitals argued that their certificates-of-need (granted in 1977 and 1978) gave them the right to go forward with construction. The rate-setting system at that time was the Standard Hospital Accounting and Rate Evaluation (SHARE) system, which set a screened base rate for Blue Cross and Medicaid inpatients. For the remaining revenue, hospitals were subject to market conditions. Financial markets continued to rate hospitals on their ability to obtain non-regulated revenues and on the amount of their total debt or debt per bed. Capital could be borrowed by those with an affluent patient base, but hospitals with a large indigent and Medicaid population were capital poor.

2. In 1980 the economy worsened. Interest rates were higher and capital resources were shrinking. The Authority became the most reliable source for borrowing even though its interest rates ended that year at about 11 percent. Hospitals still on the SHARE system continued to be controlled by the financial markets in borrowing. But the 26 hospitals that had entered the DRG-based payment system under the dictates of Chapter 83 were in a dramatically changed situation. Although the law placed limits on operating costs, it implied the full funding of approved capital projects. In fact, underwriters serving the Authority had developed a "comfort" letter that the Hospital Rate-Setting Commission would issue to bolster bond offerings "when appropriate..., designed to assure bond holders that, at a minimum, the hospital's

principal and interest costs relative to [that] particular financing will be reflected in future reimbursement rates" (56). The comfort letters appeared to have ensured confidence among bond raters and bond purchasers. New Jersey hospital bonds continued to receive highest ratings, and sell expeditiously at interest rates 1 to 2 percent lower than those of neighboring States.

The department's reaction should have been to tighten the approval process for certificates-of-need using some measure of capital efficiency derived from the DRG data.

3. In 1981 inflation lessened somewhat, but interest rates remained high. For tax-exempt New Jersey bonds, interest rates stabilized at 14 to 15 percent. The financial markets still had significant control. They kept interest rates high and were selective in rating hospital issues. This was due to a lack of monied borrowers who could compete with the Government's need to sell Treasury notes. For the first time, some bond sales were not successfully consummated at first offering.

The department initiated its capital growth policy. It wanted to treat the Capital Facilities Allowance, including the funds for an approved number of beds, as a series of payments made to a regional or statewide pool (72). But this was not something New Jersey could do without changes in Federal or State law. Reimbursement under Chapter 83 and from Medicare under the waiver could go only to individual hospitals.

The capital growth policy assumed that capital need not grow any faster than the growth of total costs, allowing the specification and use of a ratio, that of the capital facilities allowance to the preliminary cost base (CFA/PCB). When interest rates (the costs of capital) were high and would lead to great debts for construction, projects were to be delayed, made incremental, or scaled down to fall within this ratio. The policy required the approval of planning agencies and the Hospital Rate-Setting Commission. Incentives in the rate-setting system were also developed at the time for replacing some inpatient services with ambulatory services or other less costly alternatives.

There were several weaknesses in this policy on capital growth. First, it was not strictly enforced insofar as the certificate of need process continued to approve some projects that could not satisfy the CFA/PCB condition. Then, while the policy specified an acceptable level of capital costs, it did not necessarily reflect actual health care needs, or the capital efficiency of proposed projects. Similarly, the method did not allow for hospitals to choose among different resources to produce given patient services. It did not allow the community to make decisions about alternative resources and methods for health care that would not require hospital construction.

4. In 1982, a second CFA/PCB cap was developed, a ratio of 12.9 percent. Certificate-of-need applications were now analyzed by this formula before approval. If the proposed project would likely exceed the allowable ratio, the certificate-of-need would be denied, or the size of the project reduced.

National legislation to contain the costs of health care and even programs to create jobs that might replace some of the nation's capital facilities might take into account the next capital expenditures issue faced by the rate-setting system in New Jersey. The Health Care Facilities Financing Authority, confronted with the market and the inability of several approved hospital projects to fall within the capital cap, proposed a policy of noncapitalized interest:

> Under traditional practices, hospitals borrowing funds are required to include in their total borrowing an amount representing interest due to bond-holders.... [The] proposal ... would alter this process under certain circumstances. Specifically, the proposal suggests that interest on bonds paid during a project's construction period be financed through the rate-setting mechanism as a part of the hospital's operating budget (76).

The Authority argued that this policy would reduce payers' lifetime costs and allow bond sizes to be smaller, having a positive effect on a hospital's credit rating and therefore on the sale of its bonds.

The Hospital Rate-Setting Commission did approve such changes in the schedule of rates for two hospitals, after extensive public hearings on the issue of noncapitalized interest, but only for demonstration. No more changes like this were to be approved until an analysis showed the effect of these two departures from the traditional capital control by market forces and planning regulations. The commission noted that it "must consider the possibility that this approach will encourage hospital construction in a period when marketplace controls, such as high interest rates, are discouraging growth in other sectors. Finally, it is acutely aware of the immediate and substantial impact that this approach might have on payers should it be applied on a broad basis" (56). One additional hospital that applied for such increased reimbursement rates showed that under the new policy it would cost payers an additional $25 million (in the first four years after construction) before payers would be provided any savings.

When the 6-month demonstration period neared an end, other hospitals requested the same treatment. The decision about continuing this arrangement in New Jersey is unresolved, resting with the Governor. HCFA has warned the department that maintaining the policy may lead to breaking the cap on which the Federal waiver depends. In August 1982, the Director of the Hospital Rate-Setting Commission summarized the commission's concerns (76):

> 1. That payers of hospital services, including Medicaid, Medicare, commercial payers, Blue Cross, HMOs, and others, would have to pay large sums of money during a hospital's construction period, which, under a traditional financing approach, would not otherwise have to be paid. Such payments could be extremely burdensome to the payers should this approach be applied on a statewide basis. This could result in large premium increases for Blue Cross subscribers and could significantly harm the State's Medicaid program.
>
> 2. That current rate payers will be forced to pay excessively for benefits which will accrue to future rate payers.
>
> 3. That decapitalized interest would create a false market dynamic that would encourage hospitals to build at a time of high interest rates and diminishing financial resources.

4. That a broad application of this approach could have a dire effect on the conditions under which the Federal Government agreed to support the State's reimbursement program.... (76).

It has thus become clear that, in designing legislation to contain health care costs, national decisionmakers must confront the issue of capital expenditures in a more creative way than has been done before. When New Jersey calculated its 1982 capital cap it found that capital growth was occurring at a faster rate than the growth rate of hospital costs. From 1981 to 1982, the capital growth rate exceeded inflation in hospital costs by 8.5 percent.

Not all of this was due to selling tax-exempt bonds. Most of the facilities in New Jersey constructed with Hill-Burton funding were reaching the end of their useful life. It was calculated that if all were replaced in the next 3 to 4 years, even at somewhat reduced bed size, capital costs would increase at a rate 25 to 50 percent more than the rate of increase of total hospital costs. The market and regulations held back current capital expenditures. But the demand may assume even greater proportions when the economy becomes more favorable for capital borrowing. This will create a greater pressure on reimbursement rates, even in States that control rates well, than any other cost component.

Capital caps alone, no matter how calculated, did not prove useful for long-term planning. With funding from the State's Health Care Facilities Financing Authority, the department is trying to create an economic model for capital growth that will consider how efficiently a hospital uses capital. The model will attempt to factor the use of such resources as labor and supplies, and to analyze these in light of case-mix intensity. Capital growth could then be related to the use of all hospital resources and might make administrators and providers consider the most efficient mode of delivering services for different DRGs. This effort is made possible by the data afforded by the DRGs.

Some health professionals feel that the study of quality measures should parallel these efforts. A DRG may be treated today in a capital-intensive way, just as it may require greater nursing intensity. But if the outcome is not an improved patient, what should the public decide about these capital expenditures?

Others believe that the DRG data base has been overlooked as an intrinsic epidemiologic and planning tool. New Jersey's data defines the clinical conditions of the more than million persons a year who are hospitalized in the State. Outside of other uses, this data base could offer an unusual opportunity to make decisions about capital equipment and facilities -- e.g., the most appropriate uses and locations of hospitals, but also the best design of preventive programs, so that hospital care might not even be required.

Public Hospitals

There are important reasons why tax-supported (public) hospitals deserve support. These hospitals take all those who present themselves for care (15, 33). Before Medicare and Medicaid, and before State rate-setting systems made particular provisions for covering the medically indigent, public hospitals were communities' attempts to provide needed health care for all their members.

At one time, New Jersey had several public hospitals. These were generally operated by county governments, although one was operated by the government of a large city. However, all but two of these have long since become special care centers for geriatric patients, for those with long-term chronic diseases, for the mentally ill, or for those with addictive diseases. Two public hospitals remained that were classified as general acute-care institutions -- the large municipal hospital and one hospital in an affluent county that is also served by many prestigious suburban community hospitals. Both public institutions had been vigorously supported by their jurisdictions' political structures, and both had also come to expect State aid. Through difficult financial times, many public hospitals have been "saved" by affiliations with medical schools for teaching purposes. This happened in New Jersey, especially in the case of another large municipal hospital. But these hospitals were required to make payments, which were seldom made on time, to the parent medical school. The relations of the city hospital affiliated with the medical school, but which had not been absorbed by it, were thus acrimonious.

In planning for the DRG system, the State of New Jersey believed it should support public general hospitals, but also should not excessively burden payers with the financial responsibilility for unusual numbers of indigent cases. For this reason, the State passed a Public Hospitals Assistance Act in 1977, providing State appropriations to public general hospitals that contracted with the Department of Health. Contract conditions required that a hospital devote more than 10 percent of its patient days to unreimbursed indigent care, and also compliance with any State directions to improve management. Both of the public hospitals were also placed in the final group entering the DRG system so that their problems of internal management could be studied and corrected before they had to deal with the complex new requirements.

State appropriations for these two public hospitals per year often reached a figure of more than $9 million. Part of this sum was used to conduct detailed studies, particularly in the large municipal hospital, to make required changes in fundamental systems -- accounting, medical records, personnel management, and data processing.

In considering similar public hospitals across the nation, it may be instructive to know some of the studies' findings. Neither of these two hospitals will do particularly well under the DRG system, although the problems for the large municipal hospital are more serious. The county hospital cares for most of the medically indigent population in its area. Under the conditions of its contract with the State, [illegible] with excellent cooperation from its Board and the county officials who appoint them, the hospital hired competent administrative and financial managers at competitive salaries, modernized its data processing, and in other ways prepared itself for the DRG system.

This hospital's problems, which will not be severe, will stem rather from its current transitional state, similar to that of many other public hospitals: about half of its patients are hospitalized for general acute care, which will be sufficiently reimbursed, while the other half are long-term and psychiatric patients. Except for the adjustment at reconciliation for patients awaiting long-term placement while still in acute beds, and a Medicaid rate for such patients established after a famous court decision,* the DRG system does not accomodate long-term patients in acute hospital settings. Short-term psychiatric patients in general hospitals can be classified by DRGs, but no pricing of psychiatric DRGs has been accomplished for special hospitals. The lack of a fair reimbursement system for chronic, psychiatric, and other long-term patients will penalize this public hospital.

The problems of the large municipal hospital, which serves as the major center of care in the county, are problems of management and much more difficult to correct.

Under the initial contracts with the State, it was discovered through extensive audits that the city hospital did not really care for a large indigent population. Only about 5 percent of its patients proved to have no source of hospital insurance or other subsidization. But the institution was simply neither knowledgeable about third-party reimbursement, nor staffed to arrange for it. With technical assistance from the State, for example, the hospital acquired collections past due from Blue Cross alone amounting to nearly $4 million. These had never been properly billed before.

Under the DRG system, this hospital will continue to receive city and county tax support, but the amount will be deducted from the preliminary cost base. The hospital's problems of plant inefficiency -- e.g., the fact that its miles of corridors are still hand mopped -- also increase fixed institutional costs so that they can not pass screens. Yet local ordinances forbid bond sales to renovate capital plant. Continued State aid is questionable. The State expects a deficit in the face of recession and cuts in Federal aid.

A final report from consultants (34) engaged by the State detailed some of the problems that will probably cause the hospital a loss of at least a $1.6 million in revenue in its first year (beginning July 1982) on the DRG system:

- Collection of patient data: a general and severe lack of internal control, with major errors and inconsistencies in the reported hospital data so that even a simulation of 1982 DRG rates with correction for inaccuracies showed substantial disallowances.
- Business office: deficiencies in collection procedures, absence of guidelines for determining medical indigency, lack of charge structure and recording, and unnecessarily expensive collection procedures by contract.
- Data processing: the hospital's present system cannot provide the necesssary information to monitor and control costs by DRG, physician, and cost center.

---

* See Monmoth Medical Center, 80 NJ. 299, 403 A.2d 487, cert denied; 100 S.Ct. 297, 444 US 942, 62 L.Ed.2d 308.

- Accounting and collection of financial data: no accounting policy and procedures manuals, poor accounting documentation, unexplained errors and inconsistencies, confusing cost center subaccounts, no hospital system for expenses or capital budgeting, deficient collection of statistics for Medicare.

- Review of the data base: lack of trained personnel to record expenses properly on cost reports, or improve allocation of revenue and charge mapping (patients are charged differently for similar services or not charged at all).

Changes in the 1977 Public Hospitals Assistance Act permitted continued appropriation to the hospital to ready itself for the DRG system. The department believed if these numerous problems of internal management could be solved, including those relating to collection from third-party payers, the hospital had a sufficient proportion of covered patients so that it would no longer need State assistance. The amendments to the State law required that this continued assistance depended on the Governor's appointing the Board of Trustees, who would be charged with direct responsibility for making the necessary improvements in management.

New Jersey policy still holds that public hospitals serve an important function. When they are perceived as necessary, including by their neighbor institutions, they should be assisted. But the help they need, including financial help, is not always caused by unreimbursed indigent care or by a large Medicare population. They may suffer primarily, in fact, from the expectation that various governments will continue to provide support. This mitigates against the kind of managerial competence expected in most well-run voluntary hospitals.

Public hospitals will not necessarily suffer from a DRG-based prospective reimbursement system, unless they have become institutions for long-term and specialized care. They will need time, technical assistance, and most certainly the guarantee from some high authority that they will acquire the personnel and systems of management which will allow them to survive and even prosper.

7.

Interim Results

CHAPTER 7

INTERIM RESULTS

The prospective reimbursement system for New Jersey hospitals based on Diagnosis Related Groups (DRGs) is still a demonstration. The current State plans are to continue hospital reimbursement using the system.* No assessment of "success" can be complete until there has been sufficient time for all the general acute-care hospitals in the State to function within the system and to make any corrections as a result of the financial incentives and disincentives. For several hospitals, the preliminary cost base (PCB) will be established as late as 1982 with a schedule of rates for 1983 reimbursement. For a variety of reasons, most of those hospitals are those that will have the most difficulty with the system.

The Health Care Financing Administration (HCFA) is expected to evaluate the results of the New Jersey project during 1984. The methods they will use are not yet defined. If there is concern at that time, as there is today, for the solvency of the social insurance trust funds, and the relationship of its precarious position to unemployed workers, economic recession, and large federal deficits, HCFA will doubtless concentrate on the savings to Medicare, and on the system's responsiveness to their "cap."

Thus, even the measures of success have not been defined except perhaps in terms of dollars saved. Other issues may be equally important for major policy decisions about financing health care:

- Whether alternative methods of care in hospital settings, and in arrangements such as health maintenance organizations (HMOs), are fostered or impaired by the incentives in the system or are placed in competition with traditional hospitalization. If the system encouraged alternative methods of care, were the alternative methods cost-effective?

- Whether any system to contain hospital costs can be effective if it does not cover all payers?

- Whether physician behavior would be influenced as much by another system. In the DRG system, patients are classified in language developed by and familiar to doctors, and prices and budgets are defined by a medical product. Is this the most significant cause of changed institutional behavior?

- Whether hospitals can be fully responsive to incentives and disincentives without feedback comparing them in many patient-related dimensions to a statewide or regional norm (in the form of management reports)?

---

* At the beginning of the new Governor's administration, the New Jersey Hospital Association passed a resolution recommending that he continue the DRG system.

- Whether a DRG-based reimbursement system alone can carry the burden of controlling capital expenditures. That is, how well did New Jersey's system, which had DRG data for planning, especially for regional planning and for reinforcing planning through reimbursement, succeed compared to the cost containment systems of other States?

- Whether the effect on expenditures, on hospitals, and on patients would be the same if the allowable costs (financial elements) in prospective revenue budgets are not as inclusive as those used in New Jersey?

- Whether a reimbursement system is a "success" if it collects a data base that, by medical consensus, can be used to measure quality of care, but this is not done?

- What effect there might be on costs and other national policy decisions if the system were extended to include formal technology assessment and analyses of health care manpower needs and the costs of educating health professionals?

Despite these unanswered questions, some statistics and observations may indicate the interim results of the New Jersey DRG project.

Savings

Existing analyses are based on the first 26 acute-care hospitals (of 99) that entered the DRG reimbursement system.* In the hospital fiscal year 1980 to 1981, New Jersey admissions actually decreased somewhat, as did total inpatient days and lengths of stay (LOS). Admissions and total inpatient days continued to increase in the Nation; LOS were stable. Between 1979 and 1980, total operating expenses in New Jersey hospitals rose 2.4 percent less than they did in the Nation. Between 1980 and 1981, the operating expenses of hospitals in their second year under DRG reimbursement rose 4.3 percent less than they did in the Nation (13.8 percent in New Jersey vs. 18.7 percent nationwide). Expenses per adjusted admission also showed similar differences from national rates of increase that might translate into savings to payers for inpatient care in New Jersey hospitals covered by the DRG-based system (see tab. 7-1).

---

* In 1976, New Jersey recorded 118 licensed hospitals, and originally proposed to include all in the DRG experiment. Sixteen were specialty hospitals: 3 private psychiatric hospitals, 3 rehabilitation hospitals specializing in children, 3 county geriatric rehabilitation hospitals and 1 related county-operated treatment facility for addictive diseases, 3 rehabilitation hospitals for all age groups, 1 hospital specializing in long-term care for neurologic disorders, and 2 rehabilitation hospitals that later merged with a reduction in beds. DRG-based pricing has not been developed for special hospitals. They are screened under the Standard Hospital and Rate Evaluation (SHARE) system. Since then, three general hospitals closed altogether; the management decisions to close them were largely based on the effect of the reimbursement system. Six hospitals were acquired in mergers, all of which were mandated by certificates of need to cause bed reductions and to eliminate any duplication of services. This leaves 93 corporate general hospital entities under the DRG System, but rates are calculated for 99 institutions. In the merged institutions, rates are set for the parent and the satellites.

The Health Research and Educational Trust of New Jersey (HRET) has performed its own analysis from hospitals' audited financial statements to find that total operating expenses between 1979 and 1980 rose an average of 13.2 percent in DRG hospitals within the State, and 13.8 percent within non-DRG institutions (78). Research has shown that State systems to contain hospital costs do effect potential savings (1). Since New Jersey had practiced hospital inpatient rate regulation for some years before the introdution of DRGs, it is known that its hospital costs have risen at a lower rate than the national average during that time. That, in fact, is actually what the publications that have included an analysis of New Jersey have pointed out (1). One might, then, have to conclude that the better performance of New Jersey hospitals in relation to the nation as a whole, expressed as rates of increase in expenses, is attributable to rate regulation in some form rather than DRGs *per se*.

We could tell more about the effectiveness of a DRG based system for prospective hospital payments, if the focus could be on revenues actually paid out by various payers compared to some rate of increase in these revenues across a comparable group of hospitals. "Revenues to hospitals, or expenditures made on the part of consumers of care, are the relevant measure from a social point of view... [T]he entire DRG system represents a stragegy to reduce revenues; hospitals are provided with an incentive to reduce costs because revenues are constrained through the process of setting budgets and reimbursement rates prospectively" (78).

But no payer has provided a method or even a simulation model to do this, and indeed it would be difficult to make the necessary comparisons about the impact on aggregate revenues because, except in States like New Jersey, payers cover different allowable costs, and different portions of consumers' bills.

Within the State of New Jersey, the department knows that payers such as Blue Cross and Medicaid have paid out somewhat more because they have absorbed their share of additional financial elements they did not cover before. Commerical insurors document to the department that they have paid out less. For Medicare, no method exists to calculate differences in revenues that would have been projected for pay-out, except it is known that as of 1982, the cap agreed upon with New Jersey (see ch. 4) had not been exceeded, and all the hospitals in the State were not yet regulated under DRGs.

It is important for national analyses that are aimed at evaluating the effectiveness of various hospital rate regulation systems, including those based on DRGs, to develop methods to project what would have been paid out for Medicare and other payers in States that have no rate regulation system, and to compare with States that have some form of regulation. Medicare will also need to project its probable pay-outs, now that it will be operating under its own DRG-based prospective payment system, in both waivered and unwaivered

Table 7-1

Comparison of New Jersey Hospital Operating Expenses To National Averages (Percentage Change 1979-1981)

	1979-1980		1980-1981	
	New Jersey*	National**	New Jersey	National
Total Operating Expenses	14.6%	17.0%	13.8	18.7%
Expense Per Adjusted Admission	10.5	13.5	13.9	17.4
Inpatient Days	0.8	3.4	(0.6)	1.2
Total Admissions	2.3	2.9	(0.4)	0.9
Total Length of Stay	(2.3)	N/A	(0.5)	0

*Includes only hospitals on the DRG system since 1980.
Sources of data: Hospital audited financial statements and New Jersey Department of Health Annual Summary of General Hospital Inpatient Utilization.

**Source: American Hospital Association, Hospital Data Center.

Prepared by: P. Dickson, New Jersey Hospital Rate-Setting Commission

States. This should be translated into dollars of savings for each payer, or into dollars added to the share of other payers, which might occur when Medicare sets a fixed budget for its share, but does not deal with a hospital's total revenue budgets. It is the dollars of savings, and at whose expense, that the public wants to know.

Despite the inability to state the actual dollars saved any payer, much optimism has been expressed regarding the system's ability to achieve significant savings. As one analyst put it:

> "All of this ... is not to say that the introduction of DRG-based reimbursement in New Jersey is anything short of remarkable .... [T]his truly innovative and promising system ... has led to the adoption of improved management practices on the part of hospitals, increased communication between physicians and hospital administrators, improved accuracy of the data, and a heightened awareness of the costs associated with providing patient care.... [O]ver time, these improvements will ultimately lead to reductions in expenditures on the part of the consumers of care" (78).

Costs of Developing and Implementing the DRG System

For the period January 1, 1979, through September 30, 1983, HCFA, under its contract 600-77-0022, has budgeted $5,347,213 to the New Jersey DRG project, while the State of New Jersey has budgeted $5,955,359 (tab. 7-2).* Although it has been said the New Jersey project cost $10,618,229, neither participant will have spent the total amount budgeted.

The costs for the DRG system were of two types (see fig. 7-1). The first was for research and development, which was almost completely devoted to developing computer systems that are now the property of the Federal and New Jersey State Governments. The elements of this system could be modified at some cost, and the system's modules could be transferred to others for the cost of copying the software. The money spent in developing these systems will not have to be spent again. The accounting records kept for contract compliance indicate that this phase of the project cost the Federal Government $1,266,814 and the State $1,135,004, or a total of $2,401,818.

By the end of 1982, the New Jersey rate-setting system will have cost an additional $6,934,321, about half of which is State and half Federal funds. This will complete additional research and development and related computer programs that could be modified and transferred at cost. Considerable research and development also continued through this phase to complete the relative intensity measures (RIMs) calculations (see ch. 5), to complete and analyze the pilot study on quality parameters, and to carry out other activities requiring staff and data processing. Thus, less than half of

---

* This figure appears on table 7-2. It cannot be derived from adding other columns. It is the figure New Jersey projected as its matching budget in its contract proposal to the Health Care Financing Administration (HCFA), along with additional sums the State budgeted under the contract's Modification 5 for implementation.

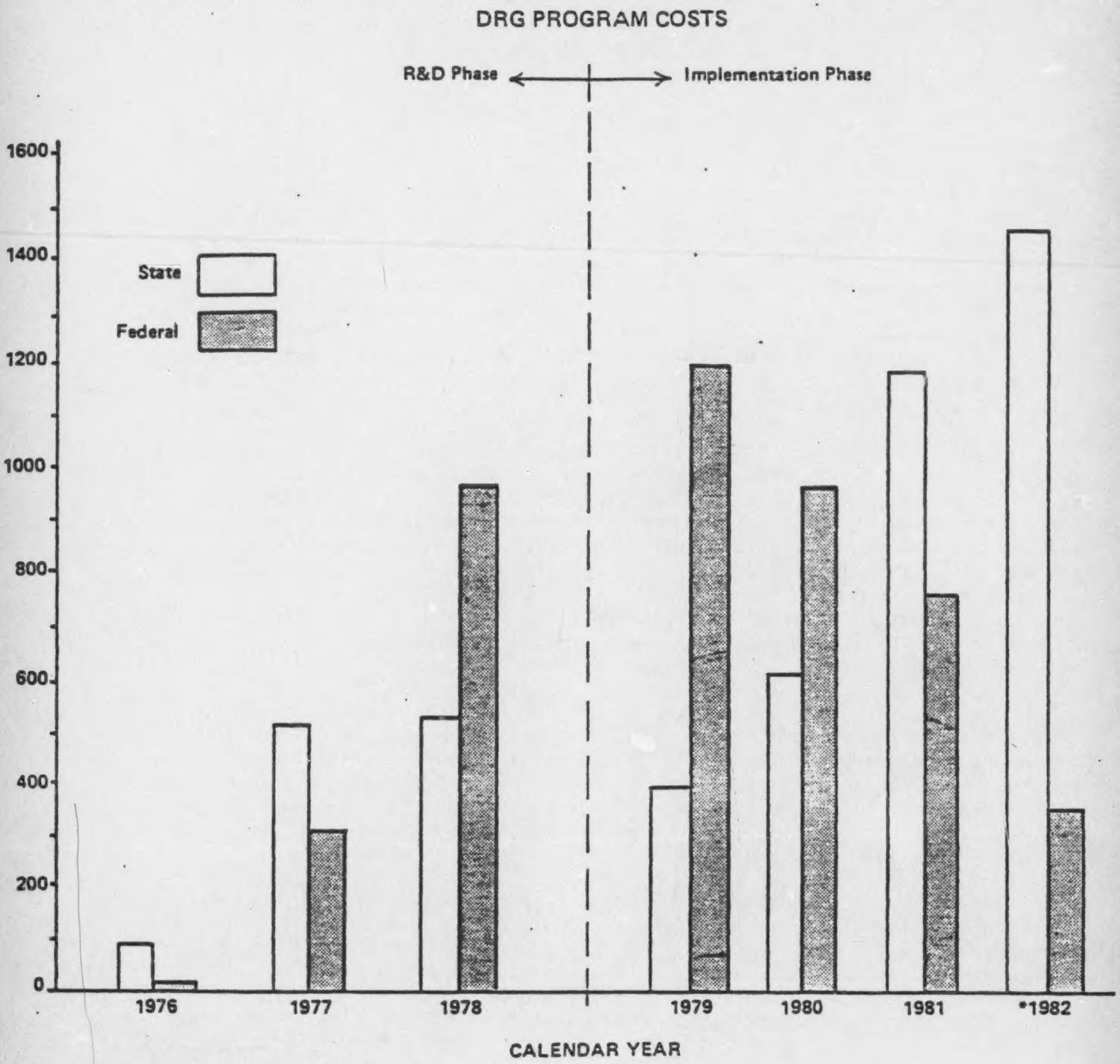
Table 7-2

COST COMPARISON FOR CASE-MIX REIMBURSEMENT SYSTEM
HCFA Contract 600-77-0022

	Original Contract 11/1/76 - 12/31/78 (26 mos.)		Modification #5 to Original Contract January 1, 1979 - September 30, 1983 (57 mos.)								Cost Comparison for Total Contract Budgeted vs Actual Expense		
	1976 & 1977	1978	1979	1980	1981	1982	Actual Exp. thru 12/31/82	Budgeted Exp. thru 12/31/82	Cost Savings thru 12/31/82	Budgeted Exp. thru 1983	Total Contract Expenses	Budgeted Exp. thru 9/30/83	Total Estimated Cost Savings
Federal Expenses													
Consultant	$ 39720	$ 7584	$ 22141	$ 46657	$ 15908	$ 11636	$ 143646	$ 240250	$ 96604	$ 0	$ 143646	$ 240250	$ 96604
Subcontractors	84891	245317	293501	182080	126283	35390	967462	1029212	61750	61750	1029212	1029212	0
TOTALS	$ 308320	$ 958494	$1190977	$ 965266	$ 766989	$ 341967	$ 4532013	$ 5242192	$ 710179	$ 105021	$ 4637034	$ 5347213	$ 710179
Authorized Budget for Contract Period		$1481011								$3866202			
Cost Savings for Contract Period		$ 214195								$ 495984			
State Matching Expense													
Consultants	$ 5584	15	1800	14723	6877	8850	37849	0	<37849>	0	37849	0	<37849>
Subcontractors	187239	27110	0	0	0	0	218349	149170	<69179>	0	218349	149170	<69179>
TOTALS	$ 613619	$ 521385	$ 399530	$ 615220	$1187527	$1466845	$ 4804126	$ 4778292	<25834>	$1177069	$ 5981195	$ 5955359	<25836>
Projected Budget for Contract Period		$ 892890								$5062469			
Actual Costs for Contract Period		$<242114>								$ 216278			
Total Contract Expense	$ 921938	$1479879	$1590507	$1580486	$1954516	$1808812	$ 9336138	$10020484	$ 684345	$1282090	$10618229	$11302572	684345

SOURCE: D. Talbot and V. Martucci, New Jersey Department of Health, DRG Project.

Figure 7-1



*Includes estimated program cost data for (2nd) half of Calendar Year.

the $6,934,321 was required for the daily operations of the centralized rate-setting system based on DRGs. Moreover, the State now receives fees for rate applications levied from hospitals entering the system. These support the rate-setting staff and costs associated with the Hospital Rate-Setting Commission.

By agreement, all staff of the project but two were removed from the Federal payroll by the end of 1982, and either absorbed by the State Civil Service system (Health Economics Service) or terminated. The entire hospital rate-setting system in New Jersey operates with a staff of 18 professionals. The remaining professional staff of the Health Economics Service, 10 persons, is responsible for other tasks, such as setting Medicaid rates for long-term care. A small number of the hospital rate-setting staff of 18 devotes its time to systems support and development and will carry on some of the research and technical work.

The three appointed members of the Hospital Rate-Setting Commission are paid a daily rate. The commission is staffed by an executive director, two analysts, and clerical support.

It is important to consider the hospitals' costs in implementing such a system. The New Jersey Hospital Rate-Setting Commission established the policy of not automatically including certain hospital implementation costs in the rate as hospitals entered the system. The New Jersey Hospital Association had recommended that a 1-percent surcharge be added to all budgets to accommodate the changes in data systems and personnel they believed each hospital would need. In November 1979, the commission rejected this proposal. However, it decided to address the costs of implementation case by case so that the amounts would be determined by the financial status and management capability of each hospital.

By the time all 99 hospitals had been granted their schedules of rates (a process completed by the end of 1982), it was estimated that awards for implementation costs totaled $16,915,802 (tab. 7-3); or an average of $168,600 per hospital. This includes commission fees. Not all surcharges to the rate are perpetuated. Often the commission has granted them for one year only, believing that the improvements they will allow in medical records personnel or data processing will cause later savings.

New Jersey's policy has been that the rate structure should provide funds to bring hospitals to the requisite level of competence for the system to work. The State believed that, with the proper information and data management, hospitals could demonstrate savings. While the costs of implementation have been built into the rates, overall if the savings to payers have been sizeable, a strong cost-benefit relationship will have been established.

The System's Influence on Hospitals with Deficits

Six of the original 26 hospitals entered the DRG system in 1980 with deficits from unreimbursed indigent care. New Jersey's Medicaid program did not cover the medically needy. Under permissive State "poor laws," counties could assist, and many did, providing funds through contract agreements with some of these hospitals. But this money was shrinking. On the new

Table 7-3

DRG Program Costs
and
Hospital Implementation Costs

R&D PHASE	STATE	FEDERAL	PARTICIPATING HOSPITALS	
			No.	Cost
1976	$ 92,957	$ 7,021		
1977	520,662	301,299		
1978	521,385	958,494		
TOTAL R&D:	$1,135,004	$1,266,814		
IMPLEMENTATION PHASE				
1979	$ 399,530	$1,190,977		
1980	615,220	965,266	26	3,316,971
1981	1,187,527	766,989	59	5,952,713
1982*	1,466,845	341,967	93**	7,646,118
TOTAL IMPLEMENTATION:	$3,669,112	$3,265,199		$16,915,802
TOTAL PROGRAM:	$4,804,126	$4,532,013		

---

*Includes estimated program costs data for second half of the calendar Year.

**Includes estimated cost data for 75 hospitals. Implementation costs to be established when Hospital Rate-Setting Commission approves final rates for 1982.

SOURCE: D. Talbot, V. Martucci, J. Warren. New Jersey Department of Health, DRG Project, and New Jersey Hospital Rate-Setting Commission.

reimbursement system, four of the six hospitals finished their first year with modest surpluses. The two others, both inner city hospitals with religious commitments to care for the poor, still had deficits, but these were substantially less than they had been the previous year.

Two other urban hospitals serving many indigent patients had finished 1979 with modest surpluses that increased by the end of 1980. The addition of the financial element for uncompensated care in New Jersey's rate calculations clearly made a difference (tab. 7-4).

Some hospitals that had deficits or a poor financial position at the end of 1979 benefited from the DRG system for other reasons. One was a well-known hospital that served an organized group of satellite family care centers and is the only inpatient center in the county. This system had insisted that it suffered under the per diem reimbursement of SHARE. Its plan for care stressed ambulatory services, not recommending hospitalization unless patients clearly required it.

This hospital had ended 1979 with a deficit of $771,458. Its case mix was found to contain more patients who were severely ill. At the end of 1980, since it was paid the established rates for these patients according to their DRGs, the hospital experienced a surplus of $936,254, and an adjusted bottom line of $677,681. In that same year, its admissions remained stable.

Another well-managed teaching hospital that provided little indigent care had finished 1979 on per diem reimbursement with a surplus of only $109,000. In 1980, after one year of reimbursement under the DRG system, this hospital showed a surplus of $3,216,000, with an adjusted bottom line of $2,366,153. This hospital had a large number of cancer patients, and a neurosurgical referral service. The major medical school with which it was affiliated also taught these specialties.

The Role of the Hospital Rate-Setting Commission

Health Policy Decisions

The stated role of the New Jersey Hospital Rate-Setting Commission is "... balancing the quality and cost of health care services.... [T]he Commission must address concerns about the access, availability, and quality of care in today's environment of high expectations and diminishing resources. On the other hand, the Commission is charged with containing the costs of health care, while at the same time promoting financial solvency in hospitals which deliver efficient, effective and necessary care" (56).

Thus, the commission has been involved in individual hospital's appeals of initial prospective budgets (its preliminary cost base). When hospitals were further along in the system, the commission then turned to DRG appeals and other issues of health policy that affected the different interests involved in providing and financing health care.

Table 7-4
The Influence of the DRG System on Hospital with Deficits

Hospital	1979 Bottom Line	1980 Bottom Line	1980 Price-Level Depreciation Allowance	1980 Capital Facilities Allowance	1980 Adjusted Bottom Line*
Large city, teaching medical center (northern New Jersey)	($1,988,000)	$3,760,000	$273,916	$478,533	$3,007,551
Large city, teaching hospital (northern New Jersey)	(2,759,950)	1,716,668	74,965	434,032	2,225,665
Inner city community hospital (central New Jersey)	(819,304)	1,010,887	95,342	325,858	589,687
Inner city community hospital (northwest New Jersey)	(399,159)	1,766,763	38,769	271,386	1,456,518

*Price-level depreciation and the Capital Facilities Fund Allowance have been deducted. This column illustrates the effect of the financial element for uncompensated care.

Source: Joseph Morris and staff, New Jersey Department of Health, Health Economics Service, 1982.

Awarding Payer Differentials

"The Chapter 83 legislation mandated the recognition of financial elements which differed dramatically from those recognized under cost-based systems. Payment by the case was one aspect of the case-mix reimbursement approach which marked a radical and necessary departure from the historical practice of per diem reimbursement for hospital services" (47). Chapter 83 requires that "all payment rates shall be equitable for each payor or class of payors without discrimination or individual preference" (NJSA, Chapter 83-1978, Section 10b). Under the new system, all payers were expected to pay DRG rates regardless of their previous practices.

The legislation also recognized that some differences among payers' practices might allow absolute equity to be waived, namely, when the practice in question provided "... quantifiable economic benefits rendered to the institution or to the health care delivery system taken as a whole" (NJSA, Chapter 83-1978, Section 10b). The law (NJSA, Chapter 83-1978, Section 18b). directed the commission to consider the following points when they could be quantified:

> (1) degree of promptness and volume of payments to hospitals so that hospitals are provided with funds for current financing of their services,
>
> (2) broad provision of health insurance coverages which are not otherwise affordable or obtainable at premium rates which are not self-supporting,
>
> (3) In determining the quantifiable economic benefits to which consideration shall be given in approving payment rates, the commission may consider overall financial benefits to society.

It was also necessary to develop policy about how to allocate uncompensated care among payers. The department adopted the principle of statewide apportionment:

> ... payers (or payer classes) have open access to the health care delivery system and consequently each payer consumes a portion of the total health care delivered in the State. Since the level of uncompensated care varies throughout the State, equity dictates that no inherent incentive exist for a payer to 'market segment' in order to avoid uncompensated care. Thus the ... system apportions uncompensated care throughout the State to each payer on the basis of the percentage of inpatient services that each ... consumes on a State-wide basis" (47).

This principle was not adopted without a struggle.

To deal with the first requirement in the law, the Procedural and Methodological Regulations (38) (sec. IV D) provided for a discount for all payers who paid promptly:

> Chapter 83 requires the coverage of a hospital's working capital needs. The regulations addressed this issue by allowing the

> hospital to increase reasonable revenue amounts by 5 percent for working capital needs. A discount amounting to all or a portion of the 5 percent of the working capital amount is allowed for payers making prompt payments.... As services are rendered the hospital is entitled to payment for the cost of the services. Any delay in payment requires the hospital to seek other sources of funds in order to meet payroll and supply costs (47).

Finally, at the end of 1980, the commission established additional payer differentials (lowered rates for particular payers) after hearing requests from five payers: New Jersey Blue Cross, Medicare, Medicaid, a group of health maintenance organizations (HMOs), and another hospitalization plan (tab. 7-5). The least debatable "quantifiable economic benefits" that these groups argued they provided were the following:

1. Concerning "incurred bad debts:" The actions of a payer may be such that without them covered patients would not be covered and therefore could not pay. Furthermore, without such payer actions a hospital would incur bad debts.

In granting a differential to Medicaid, the commission wrote:

> There is general agreement that Medicaid fully pays the reasonable costs of all medically necessary services for the population it serves. In that regard, its coverage is all inclusive and its extensiveness is considered equal to or greater than that of Blue Cross (55).

In 1981, Medicare was given an added differential as long as amendments to the Social Security Act required it to cover costs of treating end-stage renal disease (ESRD), recognizing "... the savings in bad debts attributable to Medicare's primary and comprehensive coverage of ESRD patients" (54).

2. Concerning the costs of patient accounts:

> ... the Commission has acknowledged that Medicaid patients incur no collection costs, since accounts for these patients are reimbursed in full. In addition, the Commission found that the absence of collection costs and Medicaid's extensive use of teleprocessing significantly benefit New Jersey hospitals (55).

Other proposed benefits to "the health care delivery system taken as a whole" have proved more difficult to quantify. Blue Cross was granted a temporary payer differential for subsidizing community-rated subscribers. (Blue Cross had been mandated to permit open enrollment regardless of subscriber health status, and to provide complementary direct pay for the certain other groups.) These subscribers, whose premium prices were controlled under State regulation, were believed to cost more in claims than they provided in income. There were many who strongly supported a larger differential for Blue Cross. Blue Cross argued for the social benefits of this coverage. Such enrollees might be deprived of necessary health insurance if the State had not mandated their access to Blue Cross. Perhaps this

Table 7-5

Payor Differentials in Effect 1981

Payor	Identified Benefit to Health Care Delivery System	Amount Approved	Total
Hospital Service Plan of New Jersey (Blue Cross)	Incurred Bad Debt	1.76%	
	Community Rating Subsidy	3.53%	
	Patient Accounts	0.89%	6.18%
New Jersey Medical Assistance & Health Service Program (Medicaid)	Incurred Bad Debt	1.76%	
	Patient Accounts	0.89%	2.65%
Medicare Bureau of the Health Care Financing Administration	Incurred Bad Debts	1.76%	
	Patient Accounts	0.67%	
	Treatment of End Stage Renal Disease	0.23%	2.66%
Garden State Hospitalization Plan	Incurred Bad Debt	1.76%	1.76%
HMO's			
Crossroads Health Plan	Incurred Bad Debt	1.76%	1.76%
Cumberland Regional Health Plan	Incurred Bad Debt	1.76%	1.76%
HIP of Greater New Jersey	Incurred Bad Debt	1.76%	1.76%
Southshore Health Plan	Incurred Bad Debt	1.76%	1.76%
CoMED Inc.,	Incurred Bad Debt	1.76%	1.76%
Health Care Plan of New Jersey	Incurred Bad Debt	1.76%	1.76%
Rutgers Community Health Plan	Incurred Bad Debt	1.76%	1.76%

Source: New Jersey Hospital Rate-Setting Commission, 1981 Annual Report.

coverage was the only one possible for people of modest incomes who were not eligible for Medicaid or for those who were recently unemployed.

The commission ordered an independent study (telephone survey) of subscribers in all community-rated classes. In all groups, most reported that they were in good or excellent health. Less than 24 percent had been hospitalized the previous year. In fact, most had not been hospitalized in the past three years. Most had other health insurance, not counting the Medicare beneficiaries. More than 90 percent were white, and except for those with Medicare, one-third or more held professional or managerial occupations, most of the rest were skilled labor. Very few (less than 5 percent, excepting the Medicare-dependent disabled) reported incomes of less than $5,000 per household.

HMOs were granted a differential for reducing incurred bad debts: "...[T]heir coverage is superior to that of Blue Cross. Specifically, HMOs have no deductibles for inpatient services, days of coverage are largely unlimited, and HMOs cover pre-existing conditions" (76).

However, a group of HMOs also requested an additional differential of 7 percent for the social benefit they provided in encouraging less consumption of hospital resources, reflected, they believed, in lower than average LOS. At their hearing, they could not present adequate data to justify this argument, but the commission currently awaits their further study. Public comment from many sources on the HMOs' position at the hearing noted the following:

- The DRG system itself encourages shorter lengths of stay and therefore is the incentive in HMOs' hospital payments.
- If HMO inpatients consume fewer resources than other patients, it would be reflected in the final reconciliation.
- Lower hospital costs in HMO plans are explained by a lower rate of admissions, not by lengths of stay, which seldom vary. The savings that HMOs accrue are due to practices that require less use of hospitals (76).

Even the method the department used to calculate payer differentials (the payer factor calculation) became controversial. All rate orders the commission granted stated that any loss in hospital revenue from differentials granted to specific payers would be recovered by increasing the rates of commercial insurers, self-payers, and all other nongovernment payers with the exception of Blue Cross. There were great arguments among the payers who were not "held harmless" in the calculations. Applying the payer factor calculation simultaneously, sequentially, or using a two-step simultaneous method (first having determined total amounts for Medicare, Medicaid, and Blue Cross and then holding them "harmless" as future differentials were applied) each made a difference in the rates of payers who absorbed the difference.

Social Policy: Dealing with Providers' Losses of Federal Funds

State health agencies traditionally pass through Federal grants-in-aid to public and private providers. Some categorical grants, now subsumed into block grants managed by States, went directly to local applicants in the past. With Federal budget cuts in both block and categorical grants, the Hospital Rate-Setting Commission was confronted with a problem like that facing Governors and the appropriating legislatures of States. The hospitals began to ask that the rate structure compensate for the loss of their Federal grants, if the State's general revenues could not.

The commission held extensive hearings on this issue and found disagreement, even within the Department of Health. Some were highly concerned for certain classes of patients, such as those who had previously benefited from Federally-supported maternal and child health programs. The commission hesitantly adopted this policy (56):

> As a result of budget cutbacks in Washington, many hospitals are faced with a loss of Federal and/or State grant funds. In 1981, approximately $1.5 million in grant funds were lost by about 20 New Jersey hospitals. Most of these lost grants were in mental health services, nursing training, and the Comprehensive Education and Training Act (CETA). Since the major impact of the budget cuts was not felt until after October 1, 1981, the volume of such requests is expected to increase enormously in 1982. In response to these cutbacks, the hospitals involved requested that the lost funds be made up in their rates.
>
> The Department of Health took the position that the payers of acute hospitals should not assume responsibility for programs, however necessary, which are not connected directly to the provision of acute-care services. Thus, the Department recommended that the Commission restore none of these funds lost by hospitals due to Federal and State cutbacks, with the exception of those relating to acute-care inpatient services, such as perinatal services, or alternatives to acute inpatient services which would be subject to Commission review and approval.
>
> The Commission recognized that assuming responsibility for programs perhaps more appropriately supported by other means could set a dangerous precedent. Furthermore, the Commission noted that restoring the lost funds through the rate setting process might inadvertently mute needed public attention to the issue of providing health services in the current economic climate.
>
> It is hoped that the Block Grant Process will provide monies to cover all or part of the costs of high priority programs, and that a hospital may also use board-designated funds, excess revenues over expenses, and funds generated through other means. In a time of diminishing resources, hospitals and funding agencies must place increased emphasis on program evaluation, need assessment, and identification of alternate revenue sources.
>
> Therefore the Commission decided to discourage the restoration of cutback funds. The Commission agreed, however, to consider hospital appeals in cases where the hospital demonstrates that:

1. The program relates to acute inpatient services or corresponding alternatives which, by their nature, must be offered at the hospital;

2. There is a clear need for the program which is strongly supported by the appropriate agencies involved in the oversight of these programs;

3. The hospital adequately demonstrates that it has exhausted all other avenues for funding; and

4. The program operates efficiently and has been trimmed to the furthest possible extent.

This approach assures continuation of those programs that operate in full accordance with the governing statute, i.e., those needed services delivered in an efficient and effective manner at reasonable cost. At the same time, it encourages institutions, payers and other interested parties to seek out and support other funding alternatives.

Today, there are few other sources to replace decreased Federal funds. The DRG data base will certainly provide valuable information to evaluate the cost-effectiveness of those services that must be rendered in the form of inpatient care. However, it does not provide new money to care for the mentally ill, the addicted, or high-risk mothers and their babies.

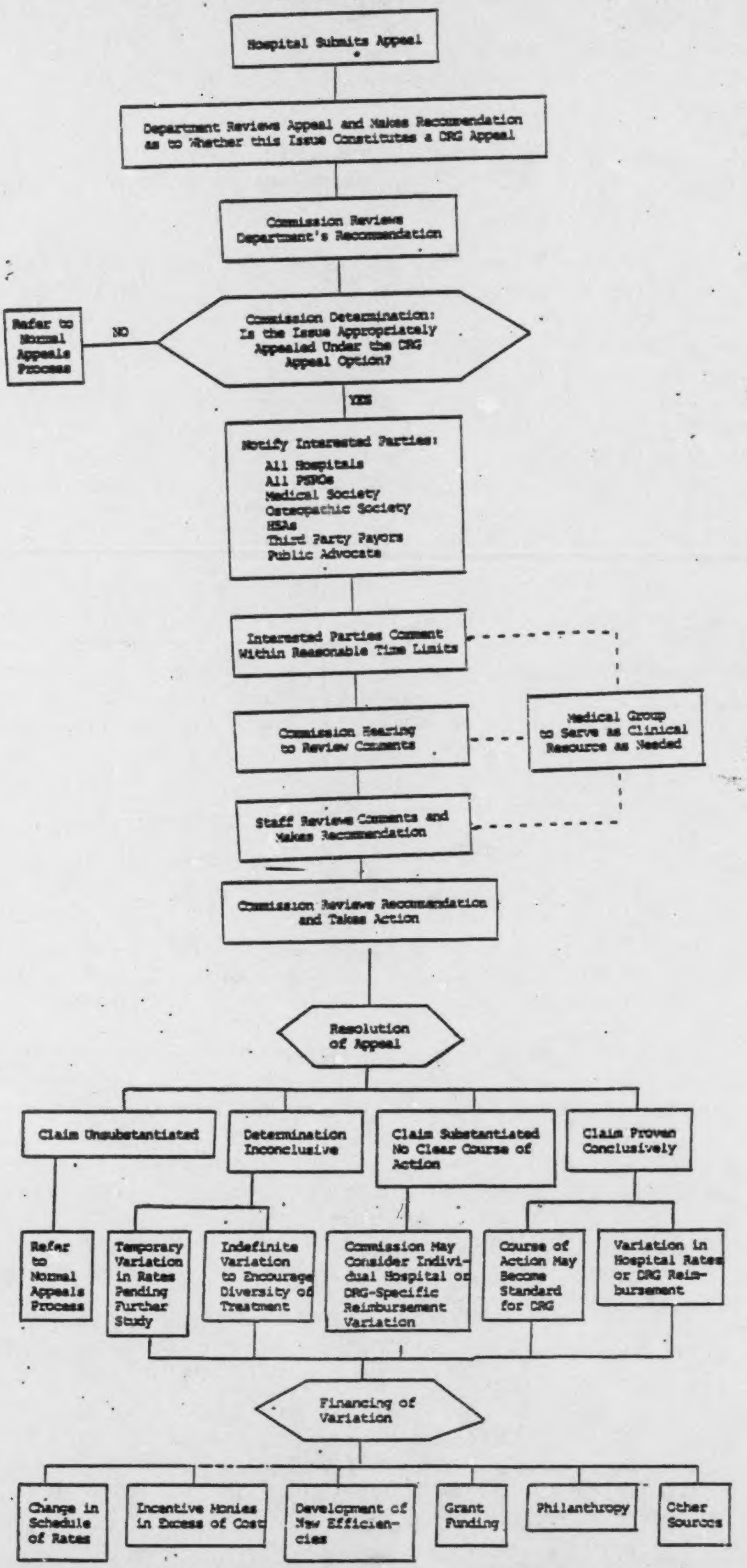
DRG Appeals: Technology Assessment

In establishing a system of prospective reimbursement, the point will be reached where all base budgets have been calculated and schedules of rates for all hospitals and all payers have been established. In addition, the system can influence the following year's revenues through reconciliation and adjustments for the economic factor. This process may offer predictability for the administrative agency as well as for hospitals and payers.

Thus, the work of the administrative agency may then change. In New Jersey, this change was to begin hearing DRG appeals. The regulations defining the functions and procedures of the New Jersey Hospital Rate-Setting Commission described the "DRG appeal" process broadly. The commission first determines whether a hospital's request for appeal constitutes a DRG appeal, i.e., "whether the medical practice in question represents procedures or medical technologies which appear to be qualitatively different from the generally accepted methods of treatment (state-of-the-art) whose costs are presently represented in the standard" (6), and if the question pertains to inpatient care practices in all hospitals.

The New Jersey regulations then require that a wide variety of interested parties must be solicited for comment (fig. 7-2). The commission chose the Physicians Advisory Committee, which developed quality measures, as the clinical advisors who would evaluate comments, quality profiles, Professional Standards Review Organization (PSRO) audits, and all material relevant to decisions on covering new technology. The DRG data base has

Figure 7-2
New Jersey Department of Health
DRG Appeals Process


Hospital Submits Appeal
Department Reviews Appeal and Makes Recommendation as to Whether this Issue Constitutes a DRG Appeal
Commission Reviews Department's Recommendation
Commission Determination: Is the Issue Appropriately Appealed Under the DRG Appeal Option?
NO
Refer to Normal Appeals Process
YES
Notify Interested Parties:
All Hospitals
All PSROs
Medical Society
Osteopathic Society
HSAs
Third Party Payors
Public Advocate
Interested Parties Comment Within Reasonable Time Limits
Medical Group to Serve as Clinical Resource as Needed
Commission Hearing to Review Comments
Staff Reviews Comments and Makes Recommendation
Commission Reviews Recommendation and Takes Action
Resolution of Appeal
Claim Unsubstantiated
Determination Inconclusive
Claim Substantiated No Clear Course of Action
Claim Proven Conclusively
Refer to Normal Appeals Process
Temporary Variation in Rates Pending Further Study
Indefinite Variation to Encourage Diversity of Treatment
Commission May Consider Individual Hospital or DRG-Specific Reimbursement Variation
Course of Action May Become Standard for DRG
Variation in Hospital Rates or DRG Reimbursement
Financing of Variation
Change in Schedule of Rates
Incentive Monies in Excess of Cost
Development of New Efficiencies
Grant Funding
Philanthropy
Other Sources

proved to be valuable in evaluating technologies just emerging for clinical use.

Even before the DRG appeals process was well established, a small temporary award was made to one hospital to balance a potential revenue loss from the use of a new technology -- a Dyna-Camera for diagnostic scanning. In its appeal, the hospital selected DRGs representing 80 percent of the cases for which Dyna-Camera is used (cerebral infarction, with and without surgery; primary site carcinoma of the liver, with and without surgery; thyroid nodule and hyperthyroidism, with and without surgery; etc.). Arraying the data by DRG, it appeared that the hospital spent less to treat this case mix than was standard. The analysis showed a low-cost performance both by DRG and cost center. However, it also indicated the loss of significant revenue. The data projected a shift of these DRGs from surgical to nonsurgical management, a shift that was already beginning to occur. As physicians became more confident with the better diagnostic tool, exploratory surgery was no longer needed in some cases. But revenue was lost because surgery is more expensive than nonsurgical treatment.

The hospital acknowledged the desirability of the trend away from exploratory surgery from the patient's point of view, but argued that it needed assistance to ensure that use of the new techniques was not discouraged by financial considerations. The hospital proposed to study the balance between savings and revenue losses over one rate year by tracking cost behavior in the selected DRGs. It argued successfully for a temporary increase in rates to introduce a technological improvement that was later likely to produce savings and benefit to patients.

By the end of 1982, the Physician Advisory Committee was preparing for one major DRG appeal and was considering the uses of the DRG data in upcoming appeals (new and expensive anti-cancer chemotherapies, cardiac surgery techniques, etc.)

A multihospital system had presented a compelling case for adding approximately $800 per case for a wide group of DRGs in which they had begun or wished to apply the technique of "hyperalimentation" (total parenteral nutrition, or TPN). The related costs -- in pharmacy, nursing, physician-surgical teams, and supply cost centers -- were not, they alleged, included in base-year calculations. Hyperalimentation was proposed both pre- and post-operatively for some surgical cases, and for nonsurgical management of nutritionally depleted patients, such as those with burns and severe trauma, to avoid complications and promote healing.

First, the Physicians Advisory Committee was to review the hospital's proposed list of DRGs based on the literature, consultation with experts, and their own clinical judgment. The need because of the patients' inability to metabolize the amino acid and lipid solutions without deleterious side effects.

The information obtained from abstracts to assign DRGs requires the coding, under minor procedures, of "other venous catheterization." For the indicated DRGs, this code can trace, with very little additional manual abstracting, cases in which TPN has been used. The data can be used to compare the treatment of these DRGs in the appealing hospital and in others with respect to LOS, mortality, complications, nursing intensity (when RIMs are used), and price. A prospective analysis, or clinical trial series, could also be developed with the same data as it is reported in the applicant hospital, although this has not been done.

The Physicians Advisory Committee has also requested staff review of the computerized data to determine whether outcome profiles can be produced for the same DRGs when therapies other than TPN have been used (more routine intravenous routes and solutions for calorie and electrolyte replacement in nutritionally depleted patients, suppression of vomiting in chemotherapy cases so that earlier normal feeding can be resumed, etc.).

Such studies take time, and providers may become impatient waiting for financial decisions. But this method of evaluating technology has significant advantages. Results are important both financially and for the quality of medical care.

Changing Organizational Behavior: The Management Reports

Public health workers trained in disease prevention and control know the importance of uniform reporting of morbidities to a central source. Such reporting is essential to epidemiologic investigation, defining probable causes, and therefore to eradicating or reducing disease. Nevertheless, as public health workers know, mandating such reporting does not necessarily mean compliance. Reporting succeeds best when there is feedback to those who take care of patients about "what is going around" and "what makes it go away." Feedback demonstrably improves reporting, and it can improve patterns of practice.

The same truths should hold for reimbursement systems. The leaders in the department believed that responses to financial incentives and disincentives would more likely occur if hospital management had access to information that might explain, by each class of patients, variations in hospital performance. It became a project task to generate "Management Reports" (see attachments L and M):

> The incentives provided by the case-mix reimbursement system should allow administration and medical practice to operate in a manner consistent with the goals of the health care consumer as they are represented by government. In order to identify the essential loop between incentive-based reimbursement and hospital medical practice, a common language must be created between hospital regulators and administration and health care providers. Such a language may be made operational from hospital performance profiles derived from the same medical and financial data used to set hospital reimbursement. The performance profiles are input-output matrices of hospital resources compared with standards on an order of detail traditionally unavailable to hospitals. Such comparisons are capable of identifying variances which may require (a) hospital management decisions regarding more effective and/or efficient allocation of resources or (b) regulatory decisions regarding the setting of a more appropriate standard (39).

New Jersey hospitals now receive annually a set of management reports with which they can compare their nonphysician costs to standards in several ways. These reports are described in attachment K.

The department provides incentive reimbursement to those hospitals meeting many measures of efficiency and effectiveness. The application of financial disincentives naturally produces less revenue for the hospitals affected, but the department does not dictate to the hospitals how to deal within these monetary "prods." It does, however, provide them with information. There are many stories now told in New Jersey about hospitals' utilization of the management reports to become more efficient, and sometimes more conscious of quality. The use of management reports to increase physicians' awareness of their role as the primary consumers of hospital resources, and therefore as the generators of excessive costs, seems to have made the most difference.

For example, one hospital produced a case study of (old) DRG 110 (diseases of the eye with surgical procedure -- removal of lens, incision into sclera). The case study was undertaken both for correction and for education. DRG 110 had been identified as the tenth highest DRG with negative variance from the standard at this hospital. The cost variance was $118 to $125 per DRG (for a total number of 251 cases). The various management reports produced the following information: Ninety dollars ($90) of the negative variance was attributable to the acute-care cost centers, particularly for excessive LOS. Fourteen ($14) dollars of the variance could be attributed to the laboratory cost center, and the rest to significant variances in pharmacy and medical and surgical supplies. The hospital's own capability to identify cases by physician pointed to one particular ophthalmologist. The director of the medical staff later determined that the admitting physician routinely performed bilateral cataract operations while other ophthalmologists performed unilateral procedures. The overall stays of patients of these other ophthalmologists sometimes proved shorter even when their patients were admitted twice for removal of each cataract. Although the discussions of the medical staff are privileged, it is known that there was great debate about the issue of "transfer trauma" for the elderly nursing home patients who made up most of the ophthamologist's high-cost patient population. The debate focused on the trauma of transfer to the hospital compared to the trauma of temporary but complete blindness when both eyes were simultaneously operated on. Today all physicians at this hospital now usually perform unilateral cataract procedures.

In another hospital, the management reports indicated that, even in patients over 85, the most expensive brand of pacemakers was being ordered. The physicians had not realized that there were differences in pacemaker prices. The physicians themselves asked that a pacemaker price list be posted and thereafter ordered according to a number of considerations of price and quality. Sometimes, economic problems can be corrected in other ways. When the price list was posted, one of the regular salesmen noted it. With one telephone call he arranged to market his company's pacemakers in that hospital for about $1,000 less.

An effort has been made by independent evaluators to study the impact of New Jersey's DRG reimbursement system on the organizational structure and processes in individual hospitals. Sets of hospitals still on the SHARE system were compared to those reimbursed by DRGs. In summary, the findings on DRG hospitals are the following (2):

(1) The operations of the departments are more decentralized. The department heads have more decisionmaking authority.

(2) The role of the medical records department has changed rather dramatically: additional and more complex functions are executed and manpower has been expanded and upgraded. The department is more integrated in hospital operations.

(3) The medical staff is more involved in the operation of the hospital, and coordinating mechanisms between medical staff and hospital management have increased.

(4) The character and flow of information has changed. The quantity and type of information that is collected has expanded, allowing for the development of more sophisticated management information systems.

(5) DRG-hospitals appear to be more 'output' oriented and SHARE hospitals to be more 'management' oriented.

The most immediate effect seemed to result from the new information available. Hospital personnel had been appropriately trained; coordinating committees were established; data processing had improved; and some of the hospitals' organizational structures had been changed, most particularly by including the doctors in hospital management and developing a new respect for medical records personnel who were central to the system's success.

New Jersey's hospitals -- and payers -- have accepted the DRG system, many with some resignation. A few hospitals are enthusiastic. In these hospitals the new system has unified the work of doctors, management, and even trustees. The Hospital Rate-Setting Commission recently authorized a three-year $3,000,000 supplementary payment for one hospital that was particularly well-organized so that it could develop a computerized clinical information system related to DRGs. Hospital clinicians will oversee its development. Medical records personnel, management, and data representatives will participate in the process. The information system will enable a physician to know when he is ordering too many tests or a more expensive device for a patient than the DRG rate or the patient's need would encourage. The hospital may sell this system when it is completed, but only at the cost of copying it.

8.

Final Comments on Replicability

CHAPTER 8
FINAL COMMENTS ON REPLICABILITY

The question has been asked whether the Diagnosis Related Group (DRG) system could be used nationwide. If further evaluation of its use in New Jersey indicates that the system contains costs without sacrificing quality, and produces valuable changes in the industry's practice and organization, this would appear to be a desirable step.

But the question is not simple. It may depend on what system using DRGs are discussed. If the system is defined as one of computer modules that have been produced with public funds, then these exist; the research and development is in many respects completed and the diffusion of these programs could begin at little added cost. If the system is defined as more than computer modules -- as a set of programs depending on many judgments about value and social policy for their formulas and factors -- then its transferability depends on political choices and legislative and regulatory processes, just as it did in New Jersey.

In some respects, a complete system may not be given justice by examining the transferability of its separate parts, but to do so may facilitate any public decisions about the system's potential national use.

DRGs as a System to Classify Patients

The new DRG list was developed through a national effort and has for now, satisfied the best of clinical judgment. It is based on a large universe of discharge abstracts from all over the country and from hospitals that are representative of the nation. Thus, it is not a classification system that is for use in New Jersey alone. The computer program GROUPER is in the public domain. But its use for many purposes, including setting rates, depends on uniform and complete reporting (abstracts) of all patient data needed to assign all patients to DRGs. If data elements are missing, those hospitals with the most complex case mixes may not receive equitable rates, or payers may sometimes overpay.

Cost Finding Using DRG Data

New Jersey discovered in its Blue Cross Experiment that regulating only one payer produced inequities and cost shifting. These problems had to be overcome by using the DRG system to reimburse each institution as a whole. If the reasonable revenue needs of needed hospitals are to be met, then all hospitals must uniformly report their base-year costs in a common format with agreed-upon definitions of total allowable costs. Otherwise, valuable information about variances from standard rates cannot be derived nor can financial incentives to change hospital behavior be established. Regarding fixed institutional costs, there must be agreement about the level of, and the mechanism for, the limits to be applied. All payers must agree on these methods.

New Jersey research has found the patient classification system of DRGs an extremely useful base for refinements in cost finding, such as for inpatient nursing. The related computer program exists and is transferable. It is also believed that DRGs would serve well in refined cost finding for educational and physician costs, but they have not yet been employed in these ways.

Billing Data For Pricing and Paying by DRGs

All hospitals bill for services provided to their patients but what they charge and how they bill differs, especially when there are multiple payers serving the patients. The lack of utility of existing billing data in New Jersey was a tremendous technical problem that was resolved by developing the Uniform Bill-Patient Summary (UB-PS). The UB-PS was mandated for use by regulation and found acceptable to all payers. The way in which it expressed charges also made it acceptable to patients.

Decisions About Financial Elements

One of the greatest differences between New Jersey's method for producing a final DRG rate and the method proposed for Medicare lie in definitions of the allowable costs (financial elements). How inflation factors are calculated and whether uncompensated care should be covered will both be controversial topics. A concern of health planners and policymakers has been to ensure equal access to care for all. In New Jersey, the inclusion of uncompensated care in the rate-setting process helped ensure this.

The decisions on these issues will have profound effects. They will affect collective bargaining agreements, access for the indigent, and the financial position and stability of some hospitals. Allowable implementation costs when starting a new payment system must also be established. A fundamental policy decision is whether some hospitals should be provided with both time and money to acquire data-processing capability and managerial competence to respond to the system favorably, or whether they should be left to struggle or even close if their capabilities are lacking.

Decisions About Setting Rates

New Jersey uses statewide standards, with three peer groups determined by hospital teaching status. The computer programs exist to calculate statistics for all 99 of its acute-care hospitals, and the State uses the standard to derive hospital-specific rates and the financial incentives and disincentives. If the system were used nationwide, some balance might be needed between a flexible hospital-specific rate-setting method and a fixed national average or standard. Part of the national policy may rest on the applicability of New Jersey's average price per case to hospitals nationwide or by regions. Because New Jersey has used a cost-containing system for a number of years, its averages may be lower than the Nation's. Then the question would be how much time should be given to hospitals elsewhere to come closer to this standard, or whether regional variations would be allowed.

Covering All Payers

The "Blue Cross discount" was a source of considerable controversy in New Jersey, particularly among charge-paying patients. In its demonstrations, the Health Care Financing Administration (HCFA) guidelines required a State to legislate the coverage of all payers in order to be waived from the Federal principles of reimbursement. The lesson for national policymaking is extremely important. As New

Jersey discovered in its Blue Cross experiment, single-payer systems, whether for measuring costs or setting rates, can harm some hospitals and some payers. The results can be unpredictable and unfair. Such a system may establish the incentives for hospitals to continue the practice of attempting to achieve the highest reimbursement possible. If cost shifting occurs when payers pay in different ways -- some payers pay per diem, some charges, and still others by the case -- then the possibilities for confusion and for the harmful treatment of uninsured or underinsured patients are greatly increased. It is also questionable whether maximum cost containment can be achieved if there are payers to whom costs can be shifted. Finally, if hospitals are heavily dependent on the most controlled payer, and not all legitimate costs are included in the calculations, then hospitals cannot remain solvent because they cannot shift these costs.

Controls of Capital Expenditures

New Jersey's reimbursement system has been used in limited ways to bring some rationale to capital expenditures. In part, when the system worked in a positive way, it occurred because planning and reimbursement were tightly linked within a single administration, and this administration controlled payment agressively to prevent unnecessary expansion and duplication. Without working limits over a period of time on total capital expenditures, however, or policy on capital expenditures when interest rates are high, a reimbursement system alone cannot manage this often exorbitant factor in the costs of health care.

Appeals

In transferring the DRG system, decisions would have to be made about how to treat appeals concerning exceptions to the system and how to treat those concerning issues generic to the hospital system. Proposed exceptions to the system could be managed by bringing hospitals onto the system gradually, and by decisions to include implementation costs and provide technical assistance. When appropriate patient data is available, the generic-type appeal lends itself to technology assessment and related decisions about reimbursement coverage. A formal process of treating appeals that have relevance to all hospitals instead of allowing extensive exceptions, promotes those payment decisions that neither obstruct innovation and improvements in patient care, nor permit funding before the worth of an innovation is known.

Management Reports

Computer programs produce valuable management reports in New Jersey. Their calculations of unit price, standards, and rates are, of course, based on New Jersey definitions and data. If the system were applied nationwide, decisionmakers would have to consider whether controls or incentives work as well if the regulators fail to provide such information to the regulated institutions. Those who worked in New Jersey to develop the DRG reimbursement system believe the management information returned to hospitals may explain most of the system's success. Statutory mandates could require national regulators to furnish such information, as well as education and training like that given members of New Jersey hospital teams to understand and use the DRG system and improve accordingly.

Quality Assessment

A payment system that does not monitor and assess the quality of care is unlikely to be acceptable to physicians concerned for their patients. The DRG data base has proved valuable in developing profiles of hospitals' quality performance, and its value in this regard should be considered for a national system. This attention to quality issues will reassure patients, involve more physicians, and help to ensure that payers do not have to pay for medical care of unacceptable quality.

ATTACHMENTS

Attachment A

Original Regulation

HEALTH

The Commissioner
Rules on Hospital Reporting
Regarding 1977 Rate Setting System

On October 21, 1975, Dr. Joanne E. Finely, Commissioner of Health, persuant to authority of N.J.S.A. 26:2H-1 et seq., with the approval of the Health Care Administration Board and in accordance with applicable provisions of the Administrative Procedure Act, adopted rules on the 1977 hospital rate review substantially as proposed in the Notice published August 7, 1975; at N.J.R. 361 (a), but with subsequent substantive changes not detrimental to the public, in the opinion of the Department of Health.

Fall test of the adopted rules follows (substantive changes indicated in boldface thus):

8:31-20.1 Hospital reporting: 1977 rate setting system; general provisions.

In accordance with N.J.S.A. 26:2H-1 et seq. the Commissioner of Health may request that health care facilities furnish the Department of Health such reports and information as it may require to effectuate the provisions and purposes of this act, excluding confidential communications from patients.

8:31-20.2 Reports to identify intensity of hospital care and hospital case mix.

(a) By January 1, 1976, each hospital included under the provisions of N.J.S.A. 26:2H-1 et seq. will complete a medical abstract covering hospital inpatient services of that hospital.

(b) The abstract to be used will be either that used for the New Jersey Utilization Program or the Professional Activities Study, or any other abstracting program which contains as a minimum the data provided by the New Jersey Utilization Program reports.

(c) By December 1, 1975, each hospital shall inform the Commissioner, Department of Health, which medical abstract form it proposes to use.

(d) The abstract will be completed by the hospital within 30 days following the patient's discharge.

(e) The abstract information will be made available to the Department of Health in a computer processable format on a monthly basis with the first report being submitted by April 1, 1976.

(f) No information identifying the patient by name or by any personal characteristics other than the hosptials' medical record number, the patient's age, sex and race will be included in the information given the Department of Health. The Department of Health is not permitted to enter the records of the hospital to identify the patient.

(g) No information identifying the phsyician treating the patient other than the hospital's code will be forwarded to the Department of Health. The Department of Health is not permitted to enter the records of the hospital to identify the physician.

(h) By January 1, 1976, the patient's medical record abstract must contain the patient's billing or account number so as to enable computer linkage of these two records at a later date.

Attachment B

Minimum Data Originally Required in Hospital Reporting and How Such Data Were Used

For DRG Formation

Hospital ID number	Used to link patient and DRG to the hospital.
Admission Date Discharge Date	Used for calculating length of stay and in merging data.
Age of Patient Primary Diagnosis (first listed) Primary Surgical Procedure Secondary Surgical Procedure (first listed)	Medical criteria used as independent variables in classifying patients into DRG's.
Discharge Status (alive or dead)	Used to separate records for analysis.
Medical Record Number	Used for obtaining error corrections from hospital.
Diagnosis/Procedure Coding Scheme	ICDA-8 or HICDA-2.
Primary Clinic Service	Used in DRG assignment of psychiatric patients.

For Costs Allocation

Payment Status	Used to assign patients by DRG to third party payers, pending claim verification by the payer.
Primary special care, days in unit	Used in allocating housekeeping, laundry and linen, and nursing costs (through Measures of Resource Use).
Date of Surgery	Used indirectly in allocating patient care services to DRGs.
Patient Billing Number	Provides link to patient's abstract and bill.

Other

Sex	Used in editing to assess consistency.
Race	Not used at present.

Transfer Destination	To be used to establish referral patterns among hospitals and to assess variation in length of stay.
Clinical Service	Used in case-mix projections.
Hospital Type	Used to identify abstract processor.
Physical Therapy Respiratory Therapy Radiation Therapy Dialysis	Not used at present.

Attachment C

Proposed Rules for 1979 Hospital Reporting of Patient Case Mix

Dr. Joanne E. Finley, Commissioner of Health, pursuant to authority of NJSA 26:2H-12, with the approval of the Health Care Administration Board, proposes to adopt more definitive rules concerning hospital reporting regarding patient case mix. These rules list the exact items to be reported to the Department of Health as the Medical Discharge Abstract Minimum Data Set.

Full text of the proposed rule follows:

I. In accordance with NJSA 26:2H-1 et seq. the Commissioner of Health may request that health care facilities furnish the Department of Health such reports and information as it may require to effectuate the provisions and purposes of this act, excluding confidential communications from patients.

II. (a) Each hospital included under the provisions of NJSA 26:2H-1 et seq. will continue to complete and provide to the Department of Health a medical discharge abstract for every inpatient discharged from that hospital.

(b) Any medical abstracting service or form may be used provided that the following Medical Discharge Abstract Minimum Data Set is supplied for every inpatient discharged:

1. Hospital Code
2. Medical Record Number
3. Patient Billing Number
4. Residence Code (County-Municipality Code as per NJAC 8:31-16.16)
5. Zip Code
6. Date of Birth
7. Sex
8. Race
9. Admissions Class
10. Referral Source (including hospital identification code of source; codes to be provided by the Department of Health)
11. Admission Hour
12. Admission Date
13. Discharge Date
14. Discharge Status
15. Transfer Destination (including hospital identification code of destination; codes to be provided by the Department of Health)
16. Primary Payer
17. Special Units and Days
18. Principal Diagnosis (ICD-9-CM or subsequent revision)
19. Major Diagnosis (ICD-9-CM or subsequent revision)
20. Other Diagnoses (ICD-9-CM or subsequent revision)
21. Principal Procedure (ICD-9-CM or subsequent revision)
22. Major Procedure (ICD-9-CM or subsequent revision)

23. Other Procedures (ICD-9-CM or subsequent revision)
24. Principal Procedure Date
25. Admitting Service
26. Attending Service
27. Consultations by Service
28. Attending Physician Code
29. Principal Surgeon Code
30. Other Physician Code

(c) The Medical Discharge Abstract Minimum Data Set enumerated in section (b) shall become effective for patients discharged on or after January 1, 1979, except as noted in section (j). Detailed explanations of the items will be provided to each hospital by the Department of Health prior to this date.

(d) No information identifying the patient by name or by any personal characteristics other than medical record number, billing number, age, sex and race will be included in the information given the Department of Health. The Department of Health is not permitted to enter the records of the hospital to identify a patient.

(e) The specific purpose of the patient billing number is to facilitate a computer linkage with Patient Charge Records submitted under NJAC 8:31-16.17. This number, as well as the patient's admission and discharge dates, must be identical to those supplied on these Patient Charge Records.

(f) The medical abstract information for all patients discharged during any quarter will be provided to the Department of Health, in a computer processable format specified by the Department of Health and supplied prior to January 1, 1979, within sixty (60) days of the end of that quarter. As per NJAC 8:43B-7.1(c), medical records must be completed within fifteen (15) days following discharge of the patient from the hospital. The medical abstract should then be completed within thirty (30) days following discharge of the patient from the hospital.

(g) All data submitted to the Department of Health must contain at least the following information on an external label: Hospital name, type of data (e.g., Medical Abstract Data), time period covered by the data, and record count.

(h) Any hospital changing medical abstract service or format shall notify the Department of Health of such changes not later than thirty (30) days prior to a change. Such changes should be implemented at the beginning of a quarter rather than in the middle of a quarter.

(i) In order to assess the accuracy of the data provided on the medical abstract, the Department of Health shall periodically examine statistically selected records consistent with the provisions of confidentiality set forth in paragraph (d).

(j) Due to potential delays caused by the initiation of providing hospital code numbers for "Referral Source" and "Transfer Destination" under section (b), a hospital may delay recording such information until a date not later than January 1, 1980. By May 30, 1979, each hospital shall inform the Department of Health in writing as to the hospital's timetable for providing this data.

Attachment D

Approved Regulation By HCAB

HEALTH

THE COMMISSIONER

Notice of Full Text of Rule Concerning Reports to Relate Ancillary Service Charges with Hospital Case-Mix

Take notice that, the Notice of Adoption concerning reports to relate ancillary service charges with hospital case-mix (See: 9 N.J.R. 467(c), R. 1977 d. 351) indicated that the rule adopted had substantive changes made in comparison to the proposed rule which was printed August 4, 1977, at 9 N.J.R. 363(a).

Full text of the adopted rule follows:

8:31-16.17 Reports to relate ancillary service charges with hospital case-mix

(a) By November 1, 1977, each hospital included under the provisions of N.J.S.A. 26:2H-1 et seq. shall submit to the Department of Health a list of the individual items and procedures charged for within an individual ancillary service for each ancillary service cost center as defined by the Standard Hospital Accounting and Rate Evaluation (SHARE) Manual. Thereafter, information which may affect this list for a given ancillary cost center, including newly-billed services and changes in billing practices, shall be furnished to the department in a timely manner prior to implementation. No information with respect to the price or price change concerning any item need be furnished.

(b) Each hospital shall submit to the Department of Health for each patient discharged a record of the total charges incurred by the patient within an individual ancillary service cost center defined by SHARE. In addition, the hospital shall submit a summary of total routine charges, a summary of total miscellaneous charges and a summary of total charges for each patient. Such information shall be submitted pursuant to the timetable set forth in subsection (c) of this section.

(c) On November 1, 1977, the commissioner shall designate three classes of institutions:

1. Class I institutions shall consist of all hospitals which either possess or utilize electronically-assisted data processing systems for patient billing. Such institutions shall submit the required data beginning with patients discharged on December 1, 1977.

2. Class II institutions shall consist of all institutions otherwise considered Class I which, because of unique circumstances, will not be able to submit in an effective and efficient manner the required data beginning December 1, 1977. An application to be considered Class II shall be submitted by such institutions no later than October 20, 1977, and must set forth:

i. A description of the unique circumstances, and ii. A detailed plan to achieve effective and efficient compliance beginning with patients discharged on March 1, 1978, but in no event later than June 1, 1978.

3. Class III institutions shall consist of all hospitals which neither possess nor utilize electronically-assisted data processing systems for patient billing. On or before October 20, 1977, all such institutions shall submit a report setting forth their current data processing status. On or before June 1, 1978 the department and each Class III hospital shall jointly develop a plan for effective and efficient compliance no later than September 1, 1978. Any Class III institution may apply to the commissioner for permission to begin submitting data as soon as they are able to provide such data efficiently and effectively. Such data may be submitted beginning with discharges on December 1, 1977.

4. The department may waive this requirement with respect to any institution unable to provide data in an effective and efficient manner.

5. Unless otherwise specified by the department, hospitals shall submit the data required above in a computer processable input medium and format on a quarterly basis within 60 days of the end of the quarter. Hence, Class I hospitals shall submit such data by February 28, 1978, for patients discharged on or before December 31, 1977; the next report due by May 30, 1978, for patients discharged on or before March 31, 1978, and so forth. Class II and III institutions shall submit the required data in a similar manner beginning 60 days after the quarter during which compliance is achieved.

(d) Patient charge records shall include a patient number, a hospital number and patient's date of discharge identical to that provided on that patient's medical abstract in order to facilitate computer linkage of the two data bases, as required by N.J.A.C. 8:31-20.2(h).

(e) Reporting and statistical options rules are:

1. Reporting options: Hospitals shall have the option of expanding their medical abstract reporting format to incorporate the required billing information. By November 20, 1977, each hospital electing this option shall so inform the department.

2. Statistical options: Hospitals shall have the option of reporting statistical units which measure relative resource consumption by ancillary service subject to department approval of a written application to exercise this option setting forth the choice of appropriate statistical units and adequate auditing safeguards.

(f) Each hospital shall identify in its SHARE budget submission, and the Department shall recognize, the reasonable costs incurred as a direct result of compliance with this regulation.

This Notice is published as a matter of public information.

G. Duncan Fletcher
Director of Administrative Procedure
Department of State

Attachment E

UNIFORM B!LL — PATIENT SUMMARY

UBPS/80

1
2 HOSPITAL NO
3 PROVIDER NO
4 FED I D NO
5

6 PATIENT'S LAST NAME
FIRST NAME
INITIAL
7 STREET ADDRESS
CITY
STATE
ZIP
A RESIDENCY CODE

8 PATIENT CONTROL NO
9 S-R
10 BIRTHDATE
11 ATTENDING PHYSICIAN
B CODE
SRVC
12 ADMISSION - START OF CARE DATE
HR
CL
13 QUALIFYING STAY DATES FROM
THRU
14 H H PLAN ST

15 PRIMARY PAYOR — NAME
CODE
16 INSURED'S NAME & RELATIONSHIP TO PATIENT
17 CLAIM CERTIFICATE—I D NO (H I C)
18 GROUP NAME - NO
19 Y N

20 SECONDARY PAYOR—NAME
CODE
21 INSURED'S NAME & RELATIONSHIP TO PATIENT
22 CLAIM-CERTIFICATE—I D NO (H I C)
23 GROUP NAME—NO
24 Y N

25 TERTIARY PAYOR—NAME
CODE
26 INSURED'S NAME & RELATIONSHIP TO PATIENT
27 CLAIM-CERTIFICATE—I D NO (H I C)
28 GROUP NAME —NO
29 Y N

BENEFITS ASSIGNED

30
BILL TO

C MEDICAL RECORD NUMBER
D M SRVC
E CONSULTS
EE READM

F REFERRAL SOURCE TYPE
CODE
G TRANSFER DEST
31

32 TYPE OF BILL

PROFESSIONAL COMPONENTS
33 RADIOLOGY
34 PATHOLOGY
35 OTHER
36 MOST COMM SEMI-PVT RATE
37 DRG
OUT

38 CODE	39 DESCRIPTION	40	41 TOTALS	42 PRIMARY PAYOR	43 SEC. PAYOR	44 TERT. PAYOR	45 PATIENT
	TOTALS →	46	47	48	49	50	51

BLOOD RECORD (PINTS)
52 FURN
53 REPLACED
54 NOT REPLACED
55 DED
56 CH-PT
57 BLOOD DED
58 F P
59 TREATMENT AUTHORIZATION
60 INPATIENT DEDUCTIBLE
61 DEDUCTIBLES
62 DEDUCTIBLES
63 DEDUCTIBLES
(64) PAID BY PATIENT

65 STATEMENT COVERS PERIOD FROM
THRU
66 PS CODE
67 DIS HR
COINSURANCE
68 DAYS
69 RATE
70 L R DAYS USED
71 PIP
72 E R
73
74 COINSURANCE
75 COINSURANCE
76 COINSURANCE

AMOUNT DUE ▼

77 OCCURR DATE
78 CODE
79 OCCURR DATE
80 CODE
81 COV DAYS
82 N COV DAYS
H ACUTE DAYS
I SNF DAYS
J ICF DAYS
84 DUE FROM PRIMARY PAYOR
85 DUE FROM SEC PAYOR
86 DUE FROM TERT PAYOR
87 DUE FROM PATIENT

88 CODE
89 PRINCIPAL DIAGNOSIS/NATURE OF ILLNESS
K MAJ
90
OTHER DIAGNOSES
91 CODE
92 CODE
93 CODE
94 CODE

95 CODE
96 DATE
97 PRINCIPAL SURGICAL OR OBSTETRICAL PROCEDURE
L SURGEON CODE
M MAJ
98
OTHER PROCEDURES
99 CODE
100 DATE
101 CODE
102 DATE

N CODE
O PROVISIONAL DIAGNOSIS
P ADM CRT A
B
NUMB
Q EXTENSIONS OBN
PA
REV
R CODE
S DATE
T CODE
U DATE

	V OPTIONALS 1-17	01	02	03	04	05	06	07	08	09	010	011	012	013	014	015	016	017	PSRO 1-11	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11

105 REMARKS

106 I CERTIFY THAT THE CERTIFICATIONS ON THE REVERSE APPLY TO THIS BILL AND ARE MADE A PART HEREOF
107 DATE
PROVIDER REPRESENTATIVE X

108 VERIFIED NON COV STAY DATES FROM
THRU
109 PAYMENT DISTRIBUTION PROVIDER
PATIENT

110 VERIFIED PATIENT LIABILITY BLOOD
CASH DEDUCT
COINSURANCE
111 NON PYMT CODE
112 DAYS USED

113 AMOUNT REIMBURSED
114 DATE RECEIVED
115 APPROVED BY (INITIALS)
116 DATE APPROVED

P4448

PAYOR ONE COPY

P 33

Attachment F

OP. NO. XSS9YRPI 06/16/82

NEW JERSEY DEPARTMENT OF HEALTH
TABLE VA DIRECT PATIENT CARE BY DRG BY COST CENTER CLASS RANKED BY TOTAL VOLUME
1979 DRG COSTS COMPARED TO STANDARDS AT HOSPITAL BASE YEAR VOLUME
HOSPITAL

DRG	DESCRIPTION	NUMBER	HOSP RANK	STATE RANK	AVG LOS		- -AVERAGE PER CASE AMOUNT BY COST CENTER CLASS - -			AVERAGE COST PER CASE	HOSP COST RANK	STD COST RANK	TOTAL FOR ALL CASES
							ROUTINE SERVICES	DIAGNOSTIC ANCILLARY	THERAPEUTIC ANCILLARY				
359	UTERINE AND/OR ADNEXAL PROC. WO DXI OF MALIGNANCY, W TUBAL INTERRUPT	77	31	47	3.2	HOSPITAL	182	70	188	440	53	73	33852
					3.1	STANDARD	186	63	225	474			36496
					-0.1	VARIANCE	4	-7	37	34			2644
					-3.27	% VAR	2.15	-11.11	16.44	7.17			7.25
262	BREAST PROC, BIOPSY AND/OR LOCAL EXCISION, WO DXI OF MALIGNANCY	75	32	27	2.6	HOSPITAL	153	80	178	411	62	58	30858
					2.5	STANDARD	153	70	198	421			31575
					-0.0	VARIANCE	0	-10	20	10			717
					0.0	% VAR	0.0	-14.29	10.10	2.39			2.27
039	LENS O.R. PROC	74	33	10	3.7	HOSPITAL	212	42	236	490	51	21	36298
					3.4	STANDARD	204	53	276	533			39442
					-0.3	VARIANCE	-8	11	40	43			3144
					-9.62	% VAR	-3.92	20.75	14.49	8.07			7.97
229	HAND PROC. WO DXI OF GANGLION	70	34	63	2.0	HOSPITAL	124	34	197	355	72	99	24836
					2.5	STANDARD	158	51	247	456			31922
					0.5	VARIANCE	34	17	50	101			7086
					20.44	% VAR	21.52	33.33	20.24	22.15			22.20
088	CHRONIC OBSTRUCTIVE PULMONARY DISEASE, MEDICAL	67	35	24	8.7	HOSPITAL	559	136	296	991	23	17	66421
					9.4	STANDARD	632	165	268	1065			71375
					0.7	VARIANCE	73	29	-28	74			4954
					7.60	% VAR	11.55	17.58	-10.45	6.95			6.94
395	RED BLOOD CELL DISORDER, AGE18+, MEDICAL	66	36	58	7.8	HOSPITAL	462	197	101	760	35	53	50143
					8.6	STANDARD	535	239	86	860			56763
					0.9	VARIANCE	73	42	-15	100			6620
					9.92	% VAR	13.64	17.57	-17.44	11.63			11.66
372	VAGINAL DELIVERY W COMPLICATING DIAGNOSIS	65	37	88	3.9	HOSPITAL	225	49	320	594	49	109	38565
					4.3	STANDARD	261	48	264	573			37245
					0.3	VARIANCE	36	-1	-56	-21			-1320
					8.11	% VAR	13.79	-2.08	-21.21	-3.66			-3.54
389	FULL TERM NEWBORN W MAJOR PROBLEM	65	38	55	5.2	HOSPITAL	305	49	39	393	71	96	25588
					5.6	STANDARD	352	45	24	421			27365
					0.4	VARIANCE	47	-4	-15	28			1777
					6.88	% VAR	13.35	-8.89	-62.50	6.65			6.49
026	SEIZURE AND/OR HEADACHE, AGE 0-17, MEDICAL	63	39	91	3.5	HOSPITAL	208	129	22	359	77	151	22617
					4.1	STANDARD	260	107	22	389			24507
					0.6	VARIANCE	52	-22	0	30			1890
					15.27	% VAR	20.00	-20.56	0.0	7.71			7.71
138	ARRHYTHMIA AND/OR CONDUCTIVE DISORDERS W AGE70CC, MEDICAL	63	40	40	7.9	HOSPITAL	648	141	77	866	32	30	54533
					7.8	STANDARD	675	198	96	969			61047
					-0.1	VARIANCE	27	57	19	103			6514
					-1.16	% VAR	4.00	28.79	19.79	10.63			10.67

Attachment G

```
DP. NO. XSSRYRPI  06/16/82
                                          NEW JERSEY DEPARTMENT OF HEALTH                                              PAGE
                               TABLE VB  DIRECT PATIENT CARE BY DRG RANKED BY TOTAL VOLUME
                          1979 DRG COSTS COMPARED TO STANDARDS AT HOSPITAL BASE YEAR VOLUME
                                                   HOSPITAL

DRG - - - - - - - - - - - - - - - - - - - - - - AVERAGE  PER  CASE AMOUNT  BY  COST  CENTER - - - - - - - - - - - - - - - - - -
NO.
                 ACU    TCU    NBN    NNI    OTH    EMR    CCA    EOG    LAB    NMD    RAD    DEL    DIA    DRU    MSS    OPM    OR3    PHT    RSP    THR

359 HOSP AV      121      0      0      0     61      0      0      8     53      0      9      0      0     12     46      0    129      0      0      0
    STD          123      0      0      0     63      0      0      4     46      0     13      0      0     13     44      0    167      0      1      0
    VARI           2      0      0      0      2      0      0     -4     -7      0      4      0      0      1     -2      0     38      0      1      0
    % VAR        1.6    0.0    0.0    0.0    3.2    0.0    0.0-100.0  -15.2    0.0   30.8    0.0    0.0    7.7   -4.5    0.0   22.8    0.0  100.0    0.0

262 HOSP AV       99      3      0      0     51      0      0      7     61      0     12      0      0     12     42      0    119      0      5      0
    STD          102      0      0      0     51      0      0      5     49      0     16      0      0     10     35      0    151      0      2      0
    VARI           3     -3      0      0      0      0      0     -2    -12      0      4      0      0     -2     -7      0     32      0     -3      0
    % VAR        2.9-100.0    0.0    0.0    0.0    0.0    0.0  -40.0  -24.5    0.0   25.0    0.0    0.0  -20.0  -20.0    0.0   21.2    0.0-150.0    0.0

 39 HOSP AV      141      0      0      0     71      0      0      6     28      0      7      0      0     27     66      0    143      0      0      0
    STD          136      0      0      0     68      0      0      7     33      0     13      0      0     39     57      0    178      0      2      0
    VARI          -5      0      0      0     -3      0      0      1      5      0      6      0      0     12     -9      0     35      0      2      0
    % VAR       -3.7    0.0    0.0    0.0   -4.4    0.0    0.0   14.3   15.2    0.0   46.2    0.0    0.0   30.8  -15.8    0.0   19.7    0.0  100.0    0.0

229 HOSP AV       77      0      0      0     39      7      0      3     18      0     12      0      0     19     39      0    139      0      0      0
    STD          101      1      0      0     51      5      0      4     27      0     20      0      0     19     47      0    179      0      2      0
    VARI          24      1      0      0     12     -2      0      1      9      0      8      0      0      0      8      0     40      0      2      0
    % VAR       23.8  100.0    0.0    0.0   23.5  -40.0    0.0   25.0   33.3    0.0   40.0    0.0    0.0    0.0   17.0    0.0   22.3    0.0  100.0    0.0

 88 HOSP AV      316     65      0      0    170      8      0     15     75      0     46      0      0     56     45      0      2     35    158      0
    STD          362     70      0      0    191      9      0     14     97      0     54      0      0     62     45      0      7      4    150      0
    VARI          46      5      0      0     21      1      0     -1     22      0      8      0      0      6      0      0      5    -31     -8      0
    % VAR       12.7    7.1    0.0    0.0   11.0   11.1    0.0   -7.1   22.7    0.0   14.8    0.0    0.0    9.7    0.0    0.0   71.4-775.0   -5.3    0.0

395 HOSP AV      298      4      0      0    151      9      0      6    155      0     35      0      0     43     42      0      4      6      6      0
    STD          345      9      0      0    175      6      0      8    157      0     74      0      0     32     34      0     10      2      8      0
    VARI          47      5      0      0     24     -3      0      2      2      0     39      0      0    -11     -8      0      6     -4      2      0
    % VAR       13.6   55.6    0.0    0.0   13.7  -50.0    0.0   25.0    1.3    0.0   52.7    0.0    0.0  -34.4  -23.5    0.0   60.0-200.0   25.0    0.0

372 HOSP AV      150      0      0      0     75      0      0      1     41      0      7    232      0     20     52      0     16      0      0      0
    STD          173      0      0      0     87      1      0      1     41      0      6    202      0     16     30      0     15      0      1      0
    VARI          23      0      0      0     12      1      0      0      0      0     -1    -30      0     -4    -22      0     -1      0      1      0
    % VAR       13.3    0.0    0.0    0.0   13.8  100.0    0.0    0.0    0.0    0.0  -16.7  -14.9    0.0  -25.0  -73.3    0.0   -6.7    0.0  100.0    0.0

389 HOSP AV        0      0    204      0    101      0      0      1     39      0      9     12      0     11      8      0      0      0      8      0
    STD            0      9    235      0    108      0      0      1     38      0      6      5      0      6      9      0      0      0      4      0
    VARI           0      9     31      0      7      0      0      0     -1      0     -3     -7      0     -5      1      0      0      0     -4      0
    % VAR        0.0  100.0   13.2    0.0    6.5    0.0    0.0    0.0   -2.6    0.0  -50.0-140.0    0.0  -83.3   11.1    0.0    0.0    0.0-100.0    0.0

 26 HOSP AV      133      0      0      0     67      8      0     18     35      0     76      0      0      5     11      0      1      1      4      0
    STD          162      6      0      0     82     10      0     10     51      0     46      0      0      8     10      0      1      0      3      0
    VARI          29      6      0      0     15      2      0     -8     16      0    -30      0      0      3     -1      0      0     -1     -1      0
    % VAR       17.9  100.0    0.0    0.0   18.3   20.0    0.0  -80.0   31.4    0.0  -65.2    0.0    0.0   37.5  -10.0    0.0    0.0-100.0  -33.3    0.0

138 HOSP AV      254    220      0      0    164     10      0     39     71      0     31      0      0     25     21      0      1     12     19      0
    STD          271    230      0      0    163     11      2     35    113      0     48      0      1     27     40      0      4      2     22      0
    VARI          17     10      0      0     -1      1      2     -4     42      0     17      0      1      2     19      0      3    -10      3      0
    % VAR        6.3    4.3    0.0    0.0   -0.6    9.1  100.0  -11.4   37.2    0.0   35.4    0.0  100.0    7.4   47.5    0.0   75.0-500.0   13.6    0.0
```

Attachment H

PRELIMINARY COST BASE REPORT

	I	II	III	IV	V
ITEM	CURRENT COSTS	INCENTIVE/ DISINCENTIVE/ CHALLENGE	ECONOMIC FACTOR AND DEBT SVCE ADJUSTMENT	COMMISSION ADJUSTMENTS	REASONABLE FINANCIAL ELEMENTS (at current cost year volume)
A. DIRECT PATIENT CARE COSTS					
1. Inpatient Non-Physician DRG Costs					
2. Inpatient Non-Physician Outlier Costs					
3. Patient Care Physician Compensation					
4. Outpatient Costs					
5. Subtotal-Direct Patient Care Costs					
B. INDIRECT PATIENT CARE COSTS					
C. NET INCOME FROM OTHER SOURCES					
D. CAPITAL CASH REQUIREMENTS					
E. CAPITAL FACILITIES FORMULA ALLOWANCE					
F. COMMISSION APPROVED INITIAL WORKING CASH INFUSION					
G. GRANTS ON BEHALF OF THE MEDICALLY INDIGENT					
H. TOTAL PRELIMINARY COST BASE PERCENTAGES OF PCB WHICH ARE ATTRIBUTABLE TO:					
1. Uncompensated Care					
2. Personnel Health Program					

Attachment I

COMPUTATION OF REASONABLE DIRECT PATIENT CARE COSTS

	I NUMBER OF PATIENTS (from Uniform Bill-Patient Summaries or medical discharge abstracts for Inpatients and Financial Elements Report for Outpatients)	II REASONABLE DIRECT PATIENT CARE COSTS/ CASE (from Schedule of Rates)	III REASONABLE DIRECT PATIENT CARE COSTS (Col.I x Col.II)	IV CHARGES OR GROSS REVENUE RELATED TO PATIENT CARE (from Uniform Bill-Patient Summaries or Medical Discharge abstracts for Inpatients and Financial Elements Report for Outpatients)
A. SCHEDULE OF RATES PATIENTS				
DRG 1				
DRG 2				
.				
.				
.				
DRG 383				
Clinic				
Emergency Service				
Home Health				
Outpatient Dialysis				
Ambulatory Surgery				
Same Day Psychiatry				
Total-Schedule of Rates	////////////////////	////////////////////		

B. **Direct Costs to Gross Revenue of Schedule of Rates (Total III ÷ Total IV)** ____________

C. **Total Gross Revenue Related to Patient Care** **(from Financial Elements Report)** ____________

Less Medical Denials **(from Financial Elements Report)** (________)

Less Administrative Adjustments **(from Financial Elements Report)** (________)

Subtotal ____________

D. **Reasonable Direct Patient Care Costs (B x Subtotal C)** ____________

Attachment J

PRELIMINARY COST BASE

RECONCILIATION TO NET REVENUE RELATED TO PATIENT CARE

		Source	Amount
A.	Financial Elements - before Working Capital Increases		
1.	Direct Patient Care Costs	Exhibit 7	
2.	Indirect Patient Care Costs	Schedule of Rates	
3.	Net Income From Other Sources	Schedule of Rates	( )
4.	Capital Cash Requirements	Financial Elements Report	
5.	Capital Facilities Formula Allowance	Schedule of Rates	
6.	Initial Working Cash Infusion	Schedule of Rates	
7.	Grants on Behalf of the Medically Indigent	Schedule of Rates	
8.	Subtotal	(Lines A.1. through A.7.)	
B.	Working Capital Increases		
1.	Gross Revenue Related to Patient Care	Financial Elements Report	
2.	Discountable Gross Revenue	Line B.1. x .05	
3.	Prompt Payment Discounts	Financial Elements Report	
4.	Discounts Foregone by Payors	Line B.2. - Line B.3.	
5.	Reasonable Working Capital Increase	(Line A.8. ÷ Line B.1.) x Line B.4.	
C.	Schedule of Rates Variance		
1.	Commission Approved Net Revenue	Line A.8. + Line B.5.	
2.	Actual Net Revenue Related to Patient Care	Financial Elements Report	
3.	Schedule of RAtes Variance	Line C.1. - Line C.2.	
4.	Schedule of Rates Variance with Interest	Line C.3 x (1 + interest factor)	

Attachment K

SCHEDULE OF RATES AS ADJUSTED FOR COMPLIANCE

ITEM	RATE PER CASE	AMOUNT
DIRECT COSTS RELATED TO PATIENT CARE		
DRG 1	$	
DRG 2	$	
DRG 3	$	
•		
•		
CLINIC PATIENTS	$	
HOME HEALTH PATIENTS	$	
EMERGENCY SERVICE OUTPATIENTS	$	
OUTPATIENT DIALYSIS TREATMENT	$	
AMBULATORY SURGERY	$	
SAME-DAY PSYCHIATRY	$	
INDIRECT FINANCIAL ELEMENTS		
INDIRECT COSTS RELATED TO PATIENT CARE		$
INCOME FROM OTHER SOURCES		$ ( )
CAPITAL CASH REQUIREMENTS*		$
CAPTIAL FACILITIES FORMULA ALLOWANCE* COMMISSION APPROVED INITIAL WORKING CASH INFUSION		$
19 SCHEDULE OF RATES VARIANCE		$
GRANTS ON BEHALF OF THE MEDICALLY INDIGENT		$
ESTIMATED UNCOMPENSATED CARE ______%		
ESTIMATED PERSONNEL HEALTH PROGRAM ______%		

NOTE: The Schedule of Rates shall be adjusted to reflect 5% working capital increases and % for payor differentials as specified by the Commission. Payor Class A shall pay % of this Schedule of Rates. Payor Class B shall pay % of this Schedule of Rates and all other Payor Classes shall pay 100% of this Schedule of Rates.

*May be adjusted in accordance with Section II.C. of the Financial Elements.

Revised 7/19/79

Attachment L

1982 SCHEDULE OF RATES

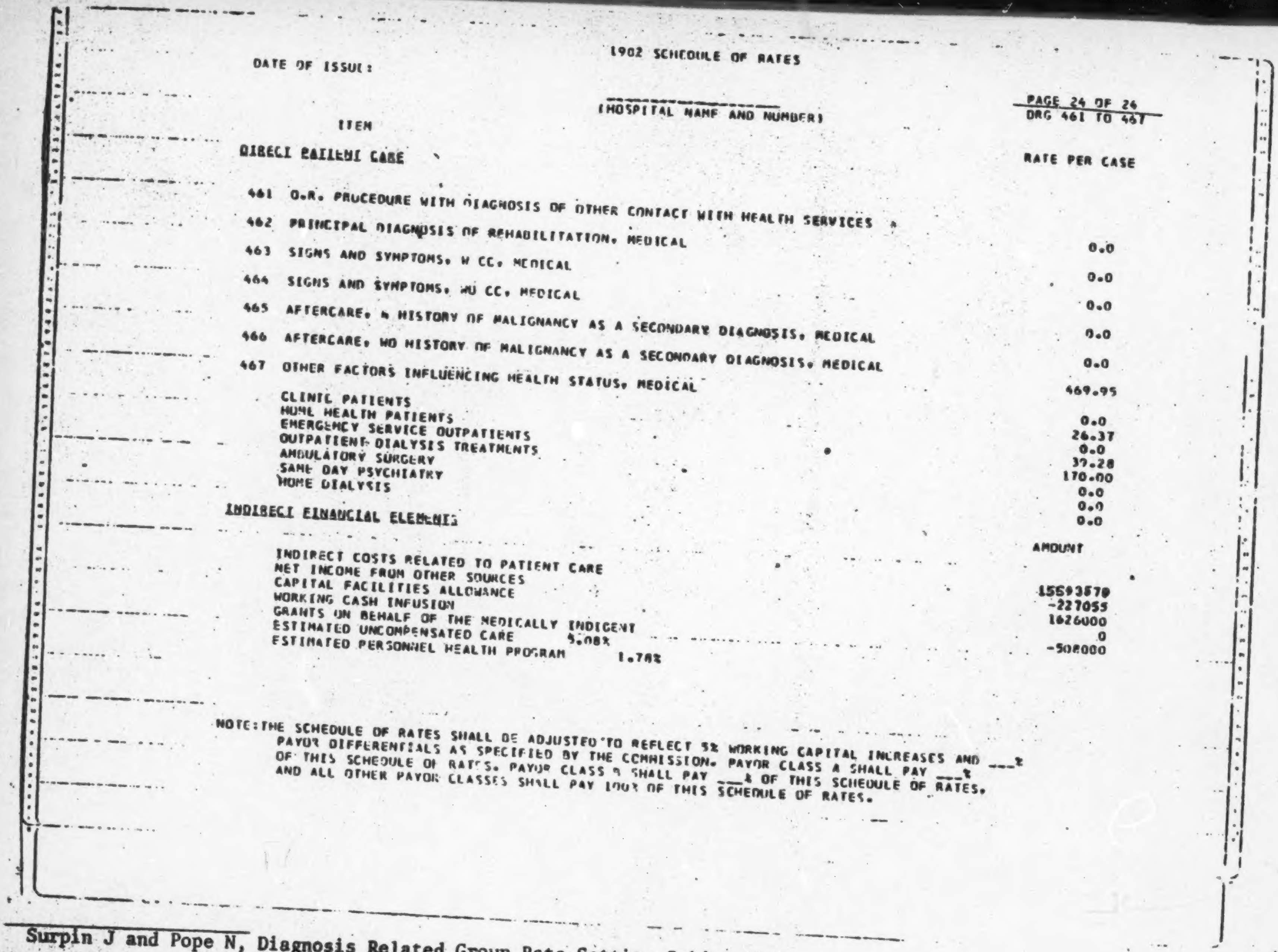
DATE OF ISSUE:

PAGE 1 OF 24
DRG 1 TO 20

(HOSPITAL NAME AND NUMBER)

	ITEM	RATE PER CASE
	DIRECT PATIENT CARE	
1	CRANIOTOMY, AGE 18+, WO PRINCIPAL DIAGNOSIS OF TRAUMA	4467.70
2	CRANIOTOMY, AGE 18+, W PRINCIPAL DIAGNOSIS OF TRAUMA	4394.51
3	CRANIOTOMY, AGE 0-17	2637.55
4	SPINAL O.R. PROCEDURE	0.0
5	EXTRA-CRANIAL VASCULAR O.R. PROCEDURE	0.0
6	CARPAL TUNNEL O.R. PROCEDURE	677.18
7	PERIPHERAL AND/OR CRANIAL NERVE AND/OR OTHER O.R. PROCEDURE, W AGE 70CC	0.0
8	PERIPHERAL AND/OR CRANIAL NERVE AND/OR OTHER O.R. PROCEDURE, WO AGE 70CC	0.0
9	SPINAL DISORDER AND/OR INJURY, MEDICAL	0.0
10	NEOPLASM, W AGE 70 CC, MEDICAL	1946.84
11	NEOPLASM, WO AGE 70 CC, MEDICAL	0.0
12	DEGENERATIVE DISORDER, MEDICAL	1306.47
13	MULTIPLE SCLEROSIS AND CEREBELLAR ATAXIA, MEDICAL	0.0
14	SPECIFIC CEREBROVASCULAR DISORDER, WO PRINCIPAL DIAGNOSIS OF TRANSIENT ISCHEMIC ATTACK, MEDICAL	2116.36
15	SPECIFIC CEREBROVASCULAR DISORDER W PRINCIPAL DIAGNOSIS OF TRANSIENT ISCHEMIC ATTACK, MEDICAL	1348.61
16	NON SPECIFIC CEREBROVASCULAR DISORDER, W CC, MEDICAL	0.0
17	NON SPECIFIC CEREBROVASCULAR DISORDER, WO CC, MEDICAL	1664.35
18	CRANIAL AND/OR PERIPHERAL NERVE DISORDER, W AGE 70CC, MEDICAL	1374.21
19	CRANIAL AND/OR PERIPHERAL NERVE DISORDER, WO AGE 70CC, MEDICAL	1024.24
20	INFECTION, WO PRINCIPAL DIAGNOSIS OF VIRAL MENINGITIS, MEDICAL	1835.04

Surpin J and Pope N, Diagnosis Related Group Rate-Setting Guide, Alpha Health Consultants, 1982



```
                                          1982 SCHEDULE OF RATES
      DATE OF ISSUE:
                                       ____________________                                  PAGE 24 OF 24
                                       (HOSPITAL NAME AND NUMBER)                            DRG 461 TO 467
               ITEM
      DIRECT PATIENT CARE                                                                    RATE PER CASE

       461  O.R. PROCEDURE WITH DIAGNOSIS OF OTHER CONTACT WITH HEALTH SERVICES
       462  PRINCIPAL DIAGNOSIS OF REHABILITATION, MEDICAL                                       0.0
       463  SIGNS AND SYMPTOMS, W CC, MEDICAL                                                    0.0
       464  SIGNS AND SYMPTOMS, WO CC, MEDICAL                                                   0.0
       465  AFTERCARE, W HISTORY OF MALIGNANCY AS A SECONDARY DIAGNOSIS, MEDICAL                 0.0
       466  AFTERCARE, WO HISTORY OF MALIGNANCY AS A SECONDARY DIAGNOSIS, MEDICAL                0.0
       467  OTHER FACTORS INFLUENCING HEALTH STATUS, MEDICAL                                   469.95

            CLINIC PATIENTS                                                                      0.0
            HOME HEALTH PATIENTS                                                               26.37
            EMERGENCY SERVICE OUTPATIENTS                                                        0.0
            OUTPATIENT DIALYSIS TREATMENTS                                                     37.28
            AMBULATORY SURGERY                                                                170.00
            SAME DAY PSYCHIATRY                                                                  0.0
            HOME DIALYSIS                                                                        0.0
      INDIRECT FINANCIAL ELEMENTS                                                                0.0

                                                                                            AMOUNT
            INDIRECT COSTS RELATED TO PATIENT CARE
            NET INCOME FROM OTHER SOURCES                                                      15593570
            CAPITAL FACILITIES ALLOWANCE                                                        -227055
            WORKING CASH INFUSION                                                               1626000
            GRANTS ON BEHALF OF THE MEDICALLY INDIGENT                                                0
            ESTIMATED UNCOMPENSATED CARE          5.08%                                          -508000
            ESTIMATED PERSONNEL HEALTH PROGRAM          1.78%


      NOTE:THE SCHEDULE OF RATES SHALL BE ADJUSTED TO REFLECT 5% WORKING CAPITAL INCREASES AND ___%
            PAYOR DIFFERENTIALS AS SPECIFIED BY THE COMMISSION. PAYOR CLASS A SHALL PAY ___%
            OF THIS SCHEDULE OF RATES. PAYOR CLASS B SHALL PAY ___% OF THIS SCHEDULE OF RATES,
            AND ALL OTHER PAYOR CLASSES SHALL PAY 100% OF THIS SCHEDULE OF RATES.
```

Surpin J and Pope N, Diagnosis Related Group Rate-Setting Guide, Alpha Health Consultants, Inc., 1982

"Attachment M: Management Report Descriptions"

Report I: Case-Mix Summary by Diagnostic Groupings (the previous year's DRG costs based on the hospital's actual base-year volume and case mix compared to standards)

Costs are given by cost-center clusters (i.e., nursing, diagnostic ancillary services, therapeutic ancillary services, and patient care general services) and compared to those of the incentive standard.

For example, Therapeutic Ancillary Services cost center clusters are identified as follows: Delivery (DEL), Dialysis (DIA), Drugs Sold to Patients (DRU), Operating and Recovery Rooms (ORR), Other Physical Medicine (OPM), Physical Therapy (PHT), Respiratory Therapy (RSP), Therapeutic Radiology (THR), Medical and Surgical Supplies (MSS).

For each group, the hospital's number of cases is presented. For each cluster the following information in unequalized dollars is provided: the hospital's total cost for the number of cases treated, the standard at the hospital's case mix, the variance between the two in dollars and as a percent.

After the clinical service areas have been listed, costs for low-volume DRGs and costs for outliers are presented. The last line presents the total number of cases, the total cost for each cluster, and the total cost for all cases.

Report II: Total Inpatient Costs by Cost Center (the previous year's DRG costs based on hospital's actual base-year volume and case mix compared to standards)

The information lists the hospital total costs and the standard costs in unequalized dollars for inliers, outliers, low-volume DRGs, and total cases per cost center or cost center cluster. Negative variances indicate hospital costs in excess of the standard. Final columns indicate the percent of the hospital's total patient care costs contained by the cluster and the percentages for the standard with the same case mix.

Report IV A: The 10 Highest Positive Total Dollar Variance DRG Costs Compared to the Standard

This report highlights those DRGs for which the hospital has the greatest positive dollar deviation from the standard so that hospitals may learn what contributes to this measure of efficiency.

For each of the 10 DRGs listed the average length of stay and the average cost per case is presented by the hospital's average, the standard, and the dollar and percent of variance from the standard. Also included are the hospital's total costs for that DRG, the standard total cost for the same volume-mix, and the variances expressed in dollars and percentages. Information is provided regarding the impact of each of these DRGs on the total hospital expenses by giving their percentages of the total patient care costs and the standard represented by each DRG.

Report IV B: The 10 Highest Negative Total Dollar Variance DRG Costs Compared to Standard

The information is presented by the same parameters as that for the 10 DRGs showing highest positive variances. It is intended to help the hospital learn more about what contributes to this measure of inefficiency.

Report V A: Direct Patient Care by DRG by Cost Center Class Ranked by Total Volume (Attachment F)

This table is used by management to review the hospital's rank in its total cases of each DRG (frequency) and also the average cost per case and total cost for all cases. These rankings and also costs can be compared with the standard. Dollar and percent variances are noted for the total cost for all cases, and significant variances can be traced back to the individual cost center clusters.

Report V B: Direct Patient Care by DRG Ranked by Total Volume (Attachment G)

This table is used by management to review and compare the hospital's average cost per case per cost center to the standard. Used in conjunction with Report V A, it can be used to trace significant variances to cost centers. Many hospitals have adapted their data processing capabilities to trace these variances back to the physicians who admitted and cared for the patients in the relevant DRGs.

Report V C: Direct Patient Care by DRG by Cost Center Class

Each DRG listed shows the hospital ranking by frequency with corresponding rankings for the incentive standard. Total unequalized cost per DRG is listed for the hospital and for the standard. The hospital is ranked for cost for all cases and compared to the standard. Dollar and percent variances are noted for the total cost for all cases, and significant variances can be traced to the individual cost center clusters.

Report V D: Direct Patient Care by DRG

This table is used by management to review and compare the hospital's average cost per case, per cost center, to the standard. Used in conjunction with Report V A significant variances can be traced to the cost centers (and to the physician within the hospital's own analytic system).

REFERENCES

References

1. Biles, B., et al., "Hospital Cost Inflation Under State Rate-Setting Programs," N. Engl. J. Med., 30(12), September 18, 1980.

2. Boerma, H., "Organization Impact of Diagnostic-Related Group Reimbursement in New Jersey," report prepared for the Hospital Research and Educational Trust of New Jersey (Philadelphia, Penn.: Agnew & Peckham Assoc., June 1982

3. Brown, L., "Billing and Payment Manual," Chapter 83, Public Law 1978, New Jersey Department of Health, 1981.

4. Caterinicchio, R., "A Prospective Reimbursement System for New Jersey Hospitals by Case Mix, 1976-1978," First Annual Report to HCFA, New Jersey Department of Health prepared for the Health Care Financing Administration under contract No. 600-77-0022, p. 126-127.

5. Center for the Analysis of Public Issues, "Bureaucratic Malpractice," (Princeton, N.J.: CAPI, February 1974.)

6. Dickson, P. S., "The DRG Appeals Process," memorandum to the New Jersey Hospital Rate-Setting Commission, May 4, 1982.

7. Donabedian, A., "The Evaluation of Medical Care Programs," Bull. N. Y. Academy Med., Vol. 44, February 1968.

8. Egdahl, R. H., et al., "Quality Assurance in Hospitals, Policy Alternatives," A Policy Monograph of the Boston University Program on Public Policy for Quality Health Care (New York: Springer International Publication, April 1976).

9. Ferguson, B., "Integrating Utilization Review with DRG Case Mix Reimbursement System," memorandum to New Jersey Hospital Rate-Setting Commission, New Jersey Department of Health, September 1982.

10. Fetter, R. B., et al., "Development, Testing and Evaluation of a Prospective Case-Payment Reimbursement System," prepared for the Health Care Financing Administration under contract No. 600-75-0180 (Rockville, Md.: Health Care Financing Administration).

11. Fetter, R. B., Mills, R. E., Reidel, D. C., et al., "The Application of Diagnostic-Specific Cost Profiles and Reimbursement Control in Hospitals," Journal of Medical Systems 1(2), 1977.

12. Fetter, R. B., Thompson, J. D., and Averill, R., "DRGs and AUTOGRP in the PSRO Setting," ch. 6 in Final Report to HCFA, Health Systems Management Group, School of Organization and Management, Yale University, prepared for the Health Care Financing Administration under contract No. 600-75-0180.

13. Fetter, R. B., et al., "Case Mix Definition by Diagnosis Related Groups," Medical Care 18(2) (Supplement), February 1980.

14. Finley, J. E., "DRG Creep," in Correspondence, N. Engl. J. Med. 305(16), October 15, 1981.

15. Finley, J. E., "The Inner City Environment and Its Special Health Care Delivery Problems," in Readings in Public Hospitals (Chicago, Ill.: Hospital Research and Educational Trust, 1978).

16. Finley, J. E., transmittal letter for the New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix, 1976-83," Part I: Technical Proposal, January 1, 1979.

17. Finley, J. E., "A Statement of Policy by the New Jersey Department of Health: The Use of Measures of Institutional Quality in Setting Reimbursement Rates," prepared for the Commissioner's Physician Advisory Committee, New Jersey Department of Health, March 28, 1978.

18. Finley, J. E., memorandum to the Honorable Brendan T. Byrne, Governor of New Jersey, December 4, 1978.

19. Finley, J. E., and Eitel, L., "Report of the Pilot Study on Quality Measures," New Jersey Department of Health, January 1982.

20. Finley, J. E., and Rabinowitz, B., "Never Die: Saving Health Planning Under Federal Caps and Clips," paper presented for the Health Administration Section, 109th Annual Meeting of the American Public Health Association, Los Angeles, November 1981.

21. Finley, J. E., Reiss, J. B., et al., "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix," Part I: Technical Proposal, New Jersey Department of Health, prepared for the Health Care Financing Administration under contract No. 600-77-0022, November 1975.

22. Finley, J. E., Reiss, J. B., Heil, D. D., et al., "A Prospective Reimbursement System Based on Patient Case Mix for New Jersey Hospitals - 1967-1978" in First Annual Report to HCFA, New Jersey Department of Health, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

22a. Goldman, S., "In Re: Public Hearing on the Economic Factor: Hearer's Report," October 1976 (Reproduced in New Jersey Department of Health, Third Quarter Report to HCFA, Appendix B.4, Vol III.)

23. Goldschmidt, F., and Lichtig, L., "Introduction to ICD-9-CM 1982 DRGs," progress notes of the New Jersey Medical Records Association, October 1981.

24. Kalison, M. J., "Fundamentals of Rate Design," in "A Prospective Reimbursement System for New Jersey Hospitals Based on Patient Case Mix, 1976-78," Seventh Quarter Report to HCFA, New Jersey Department of Health, prepared for the Health Care Financing Administration under contract No. 600-77-0022, December 1978.

25. Kaples, J. M., Acting Director, Office of Research, Demonstration and Statistics, Health Care Financing Administration, Department of Health, Education and Welfare, letter to B. Vladeck, New Jersey Department of Health, December 28, 1978.

26. Knauf, R., "Implemetation of Diagnosis-Related Group Rate Setting in New Jersey," draft, December 1979.

27. Lave, J. R., and Lave, L. B., "The Extent of Role Differentiation Among Hospitals," Health Services Research 6:15, spring 1971.

28. Lichtig, L., "Exit Report from the DRG Project Econometrician," memorandum for New Jersey Department of Health, spring 1982.

29. Mills, R. M., Fetter, R. B., Reidel, D. C., and Averill, R., "AUTOGRP: An Interactive Computer System for the Analysis of Health Care," Medical Care 14(7), July 1976.

30. Morris, J., and Ferguson, B., "Historical Overview of Chapter 83 UR Regulations," memorandum to the New Jersey Hospital Rate-Setting Commission, New Jersey Department of Health, September 1982.

31. Morrison, P., Smith, G., et al., "The RIM: A New Concept for Nursing Management," New Jersey Department of Health, September 22, 1982.

32. National Academy of Sciences, Institute of Medicine, Reliability of Hospital Discharge Abstracts, publication No. IOM-77-01 (Washington, D.C.: National Academy of Sciences, February 1977).

33. Nelson, R. A., "The Future of the Public-General Hospital: An Agenda for Transition" (Chicago, Ill.: Hospital Research and Educational Trust, 1978).

34. Network, "Report to the Board," on 1981 DRG Rate Simulation and Chapter 83 Compliance and Review, unpublished consultant report for the State of New Jersey, Randolph, N.J., March 1, 1982.

35. New Jersey Department of Health, A Manual for Prospective Reimbursement Under New Jersey Chapter 83, Public Law 1978, (Trenton, N.J.: New Jersey Department of Health).

36. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix, 1976-1983," amendment, prepared for Health Care Financing Administration under contract No. 600-77-0022, January 1, 1979.

37. New Jersey Department of Health, *Procedural and Methodological Regulations* (as revised December 15, 1981) (Trenton, N. J.: New Jersey Department of Health, 1981).

38. New Jersey Department of Health, *Procedural and Methodological Regulations* (as revised December 15, 1981) (Trenton, N. J.: New Jersey Department of Health, 1981) amended version, 1982.

39. New Jersey Department of Health, "A Prospective Reimbursement System Based on Patient Case Mix for New Jersey Hospitals, 1976-1983," *Part I: Technical Proposal*, prepared for Health Care Financing Administration under contract No. 600-77-0022, January 1979.

40. New Jersey Department of Health, "A Prospective Reimbursement system for New Jersey Hospitals Based on Case Mix, 1976-1983," *First Annual Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

41. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix," *Second Quarter Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

42. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey hospitals Based on Case Mix, 1976-1978," *Third Quarter Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

43. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix, 1976-1983," *Second Annual Report to HCFA* (section prepared by the Commissioner's Advisory Task Force of Financial Elements) for the Health Care Financing Administration under contract No. 600-77-0022.

44. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix," *Sixth Quarter Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

45. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix," *Third Annual Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

46. New Jersey Department of Health, "Handbook for Bill Abstract Merge," *Ninth Quarter Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

47. New Jersey Department of Health, "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix, 1976-1983," *Fourth Annual Report to HCFA*, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

48. New Jersey Department of Health, "1978 Length of Stay for All Acute Care Hospitals," March 1980.

49. New Jersey Department of Health, "1979 Length of Stay Statistics for All Acute Care Hospitals," April 1981.

50. New Jersey Department of Health, *Reliability of New Jersey Hospital Discharge Abstracts*, unpublished, 1979.

51. New Jersey Department of Health, *SHARE Guidelines*, 1976 and 1979 revisions.

52 New Jersey Department of Health, "Uniform Bill - Patient Summary (Inpatient) Regulations," August 7, 1980; revised March 6, 1982.

53. New Jersey Hospital Rate-Setting Commission, (First) *Annual Report* (Trenton, NJ: New Jersey Department of Health, 1980).

54. New Jersey Hospital Rate-Setting Commission, "In the Matter of the 1981 Application of the Medicare Bureau of the Health Care Financing Administration," resolution of the December 2, 1981 meeting.

55. New Jersey Hospital Rate-Setting Commission, "In the Matter of the Application of the New Jersey Medical Assistance and Health Services Program (Medicaid) for a Payment Differential," resolution of the November 3, 1980 meeting.

56. New Jersey Hospital Rate-Setting Commission, *1981 Annual Report* (Trenton, N.J.: New Jersey Department of Health, 1981).

57. Puter's Annual Report, reproduced in "A Prospective Reimbursement System for New Jersey Hospitals Based on Case Mix," *First Annual Report to HCFA*, New Jersey Department of Health (Appendix Vol. IIA), prepared for the Health Care Financing Administration under contract No. 600-77-0022.

58. Reiss, J. B., "Executive Summary," *Third Quarter Report to HCFA*, New Jersey Department of Health, prepared for the Health Care Financing Administration under contract No. 600-77-0022.

59. Reiss, J. B., "Medicare-Medicaid Waiver," information package transmitted to the U.S. Department of Health and Human Resources, Health Care Financing Administration, October 30, 1978.

60. Rossman, J., et al., "An Economic Factor for the Hospital of New Jersey," *HANYS*, December 1977.

61. Sherpes, V., "Employment Cost Index: A Measure of Change in the 'Price of Labor,'" *Monthly Labor Review*, prepared by the U.S. Department of Labor, July 1975.

62. Simborg, D. W., "DRG Creep -- A New Hospital Acquired Disease," *N. Engl. J. Med.* 304(26):1602, June 25, 1981.

63. Spitz, B. "State Guide to Medicaid Cost Containment," in Intergovernmental Health Policy Project, George Washington University, and the Center for Policy Research, National Governor's Association, Washington, D.C., 1981.

64. Steinwachs, D. M., et al., "The Impacts of Per Case Hospital Reimbursement Based on Episodes of Care Analysis," paper presented for the Medical Care Section, 110th Annual Meeting, American Public Health Association, Montreal, Quebec, November 1982.

65. Thompson, J. D., "Unreasonable Costs of Hospital Services", Milbank Mem. Fund Q. 46:35, 1968.

66. Thompson, J. D., Abernethy, D., et al., Prospective Reimbursement and the Linkages of Federal Cost Control Programs, a report to the Subcommittee on Oversight and Investigations, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, May 1977.

67. Thompson, J. D., Fetter, R. B., Mross, C. D. "Case Mix and Resource Use," Inquiry 12(4) December 1975.

68. U.S. Department of Health and Human Services, Health Care Financing Administration, contract No. 600-77-0022 with the New Jersey Department of Health, Modification #5, December 15, 1978.

69. U.S. Department of Health, Education and Welfare, Health Care Financing Administration, Research in Health Care Financing Monograph, Spring/Summer 1977.

70. U.S. Department of Health, Education and Welfare, National Center for Health Statistics, "Uniform Hospital Abstract: Minimum Data Set," Vital and Health Statistics, series 4, no. 14 (Washington, D.C.: U.S. Government Printing Office, 1972).

71. Vladeck, B., "The Medicare Waiver and Cap," background paper prepared for the New Jersey Senate Committee on Health, Institutions and Welfare, for hearings on Chapter 83, 1980.

72. Vladeck, B., memorandum to members of the Health Care Administration Board on Chapter 83 Issues, background paper on the Capital Facilities Allowance, spring 1981.

73. Vladeck, B., memorandum to members of the Health Care Administration Board on Chapter 83 Issues, background paper on Major Moveable Equipment, spring 1981.

74. Vladeck, B., memorandum to the members of the Health Care Administration Board on Chapter 83 Issues, background paper on Payment by the Case, Spring 1981.

75. Ward, R., unpublished report of the Governor's Commission to study Blue Cross in New Jersey, 1967.

76. Warren, J., "Recommendation on the HMO's Application for an 8.76 Payment Differential," memorandum to members of the New Jersey Hospital Rate-Setting Commission, May 1980.

77. Warren, J., "Decapitalized Interest," memorandum to the Director of the Office of Policy and Planning of the Governor, State of New Jersey, August 1982.

78. Wasserman, J., Hospital Research and Educational Trust, personal communication, spring 1983.

79. Wharton, T. E., unpublished report of Special Counsel to the Commissioner of Banking and Insurance of the State of New Jersey for the Public Interest, January 14, 1970.

80. Worthington, N., et al., "A Case Study of Prospective Reimbursement in New Jersey," prepared for the National Hospital Rate-Setting Commission study and the Health Care Financing Administration under contract No. 500-78-0036, August 1979.

81. Yale University, School of Organization and Management, Health Systems Management Group, "The New ICD-9-CM-DRG Classification Scheme," *Final Report to HCFA*, May 1982.